The Builder.

VOL. XVI.—No. 783.

Occupation for Girls. Children's Toys and Future Men.

AS the education and the training, so are the children; as the children, so are the men and women. If, for example, we would have the children of the struggling classes grow into orderly, sensible, and striving citizens, we must give them a road out of the slough, show them the value of order, and furnish them with weapons for the strife; and, to confine ourself to two points out of many, if we would have the easy classes, the well-to-do, alive to excellence, tasteful, and appreciating beauty, care must be taken that the senses of the children are early accustomed to beautiful forms, colours, and sounds. As poor Loudon used to say years ago, the infant-school is the lever by which the improvement of society must be worked. Every effort to provide means of training for those who would otherwise be without it,—every endeavour to give the children of the poor knowledge of common things, and lead out their better parts, has our heartiest support. Let us offer a word of thanks, then, to Mr. Robert Hanbury, M.P. who is endeavouring, we hear, to form a laundry, where girls may be received and be instructed in such operations as would enable them to undertake engagements either in families or in washing establishments. It is proposed that the girls should be properly cared for, and receive necessary teaching of other descriptions.

It appears that it will require about 500*l.* to start the laundry, and a considerable part of this sum has already been subscribed. The great need of means for instructing young women in the proper execution of work which will enable them to earn an independent and respectable livelihood in all our large towns is evident, and several attempts have been made to provide this instruction for those whose homes are such that they have no opportunity of acquiring the knowledge and facility which would enable them to do their duty properly in decent families. This want leads many girls who are afterwards to become the wives of working men to flock to the various departments of needlework, and to such fancy occupations as bugle-threading and artificial flower-making, which so occupy them during some of the most useful years of their lives that they seldom have much liking for or know anything of the household duties necessary for the comfort of a family. Businesses of this kind give employment to large numbers of young children, but *profitable wages to very few adults.* For instance, girls are sent to assist in the manufacture of artificial flowers as young as six or seven years of age. The bulk of the work is mechanical, and can be easily acquired with but little practice. On the design of a flower being determined, the die-sinker is set to work to engrave stamps, which, by the aid of a machine, strike through several sheets of muslin, or other material of the required colour, at the same time, the forms of the leaves or parts of flowers. The staining process varies some of the pieces, which are then distributed amongst the little workers. For instance, having all the materials for a number of violets prepared, some of the girls are provided with pieces of wire cut to the proper length, and these are covered with green paper, which has been already cut in strips: the petals of the flower are fixed to the top of the wire, and the other parts are rapidly gathered up and put in order, when it is passed to a superior hand, who pastes the whole together, and fashions it into shape. The staining of parts is not difficult, and the chief aim in this work seems to be to produce the greatest quantity in the shortest time. We are told that fresh designs, both single flowers and groups, are at times purchased in Paris, and then reproduced in London in a superior manner, and at a less cost than they can be produced in quantities in the French capital. It might be thought that those employed in this manner would have some knowledge of botany, and take an interest in the exact imitation of nature. This, however, is not the case, and many who have worked long at particular flowers are totally ignorant of their names and peculiarities. They simply work (we speak of the generality) in putting together so many forms which are already cut. We ask pardon for this apparent digression, but the bulk of our readers know as little of the system pursued in making such things as the young London workers know of the flowers they imitate; and what we would show is, that sending children of tender years to this and similar employments prevents them from acquiring the knowledge necessary for useful life. When the demand is brisk, they may earn from ten to twelve shillings a-week; but constant employment is not always to be had, and, taking into account the time lost, it is probable that the average wages of this class is not more than eight shillings a-week throughout the year,—a small sum to provide lodging, food, and clothing. Moreover, the wheel of fashion may turn, and artificial flowers, as an article of female adornment, may become as little in request as are the brilliant and richly ornamented brass buttons, which were once the glory of all true-born Englishmen.

Returning to Mr. Hanbury's project, we must note that there are difficulties in the way. At the foundation of the institution for destitute persons, near Field-lane, arrangements were made to provide the means of teaching girls who had been reared under bad conditions the art of spreading a tablecloth and arranging a room with neatness, to wash and iron linen, and so on; but the endeavour, although feasible in theory, did not succeed. Habits of neatness and cleanliness are not to be bestowed in a dozen lessons; moreover, there was a want of materials to work upon, and the whole had the aspect of a "make-believe." The present endeavour, however, will be differently conducted. The intention, at any rate, is excellent. The laundry should be made as nearly self-supporting as possible, and have such a character as would induce respectable working-men to send their daughters for the instruction that would be afforded.

High up in a house in Percy-street, Rathbone-place, an attempt is being made by an earnest woman to employ and improve a few girls. What she seeks is by the manufacture of toy-furniture, during one half of the day—tables, chairs, beds, and sofas, mostly formed of wire, covered with various materials—to enable them to maintain themselves; and, during the other half of the day, to acquire some useful knowledge. The endeavour has not reached very far yet: the sale being comparatively limited, the number of girls is at present very small. The toys will be found at stands 59 and 60 in the Soho Bazaar. They are more tasteful than some of the toys sold for children, and not dear. Aid is deserved.

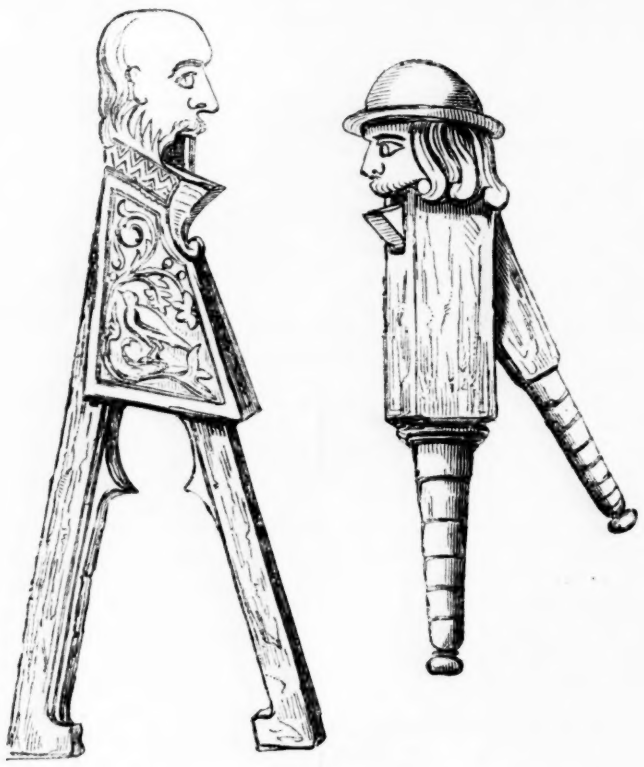
And this brings us to the second point of our observations. Toys ought to be made to advance education; whereas the majority of those furnished to children in this country must do a great deal more harm than good: half of them should be burnt ignominiously as early corrupters of public taste. It is impossible to estimate the extent to which the after-life is influenced by the earliest impressions. A child should see none but beautiful forms.

George Stephenson had few if any toys; but as intelligence dawned upon him he took the materials provided by nature, and fashioned them after such things as were about him. Sir Isaac Newton made mills and telescopes for toys. The father of the inventor of the steam-hammer, who was not only an able artist but also a man possessed of much constructive skill, provided his sons at a very early age with saws and hammers, and set them to work to construct their own toys. Many instances might be given of eminent men whose talents have been awakened in earliest childhood.

Foreign toys are generally much better than English toys. Look through a collection of the latter: you will find them flimsy and inartistic in the extreme; many of them hideously ugly, others made as if expressly to break—an evil in more ways than one, since they may actually engender a habit of destroying. Some of the toys in the German Bazaar display considerable artistic power: some of the small heads, for example, used as boxes, are forcible and clever; and there is a French infantry soldier rude but characteristic. The carts and drays are exceedingly well made, the horses full of spirit. Some of the best toys obtainable, "Noah's arks," for example, are made in Switzerland—in picturesque mountain regions: most of the animals are cut in soft white wood, and some are beautifully formed, with special disregard, nevertheless, to proportionate size. Whole families employ a large amount of their time in this manufacture. One man is famous for his antelopes, another for lions, some for cats and dogs; and we are told that they often go on, from boyhood to old age, carving dogs or lions as their taste may have led them to either one or the other in the first instance. Some toys seem to have afforded employment for several generations, and it is noticed that the gaily painted Swiss milk-maids and similar figures have not been altered in form in the smallest particular for upwards of a century.

In many articles deterioration is evident: compare the nut-crackers to be found in some of the toy-shops, with two common specimens sketched on next page, which were made—one early in the reign of Queen Elizabeth and the other in the time of Charles II. They are not remarkable for purity of design or beauty of workmanship, but show that quaint feeling which existed in former days, and which caused our workmen to adapt with different degrees of finish picturesque and artistic forms to the most ordinary objects. They serve also to mark in some measure the change which took place in a certain interval. In the older may be seen a remnant of the mediæval spirit. The bird in the foliage picking the nuts well carries out the idea of the head-piece and jaw. On the other, beyond the head, there is no attempt at that kind of decoration which conveys any idea.

In the old days, the English people were not so fortunate as to have our famous contemporary, *Punch*, to cater for that quiet feeling for fun (which, in spite of all that has been said to the contrary, exists in this country to a remarkable extent), and to figure in a humourous yet philosophic manner the follies and abuses of the age. The spirit, however, which has led to the appreciation of *Punch*, showed itself in various other ways, in the carved stalls of



Nutcrackers: time of Queen Elizabeth and Charles II.

cathedrals and churches, the cunningly devised rebuses, and other portions of ancient architecture.

In examining the table vessels of the middle ages, we are struck by the extent to which this feeling of design has been carried. Amongst these may be noticed vessels shaped like bears, lions, and other animals, the crests of distinguished families, and which, when filled with the beverages of those days, were almost as powerful in the overthrow of man as the animals represented. Great ingenuity was displayed in the construction of drinking-cups, both those made of metal and of clay. Some are so contrived with holes, that if the thirsty soul do not understand the trick of the tankard, he finds the contents spilled upon the habiliments instead of entering the mouth; and some are so made, that when the jug is emptied, a peculiar and unpleasant croaking sound is heard, and the astonished drinker is still more surprised by the appearance of a frog, or some similar animal, with uplifted head and open mouth, at the bottom. Some of these flagons are of the shape of windmills, and others of human figures, the head and parts of the body of which can be lifted up, and serve the purpose of lids. Some cups are made without stands at the bottom, and can be replaced on the table only when the contents have been emptied. We might mention many other instances of the description of design above referred to, the "grey beards," and devices on bottles. But it is not necessary, nor to direct attention to the beautiful design and workmanship of the period referred to, exhibited in objects more important, conceived and executed with a more refined and a higher feeling. We are dealing with toys and their manufacture,—a business of enormous magnitude, and concerning which much more might be said. Our object, however, now is simply to urge, as we have more than once done before, that the toys of children offer a ready means of education, and probably exercise an important influence on the career of thousands. Some would have us leave the taste of the young to take its chance. "Thelwall," says Coleridge, "thought it very *unfair* to influence a child's mind by inculcating any opinions before it should have come to years of discretion, and be able to choose for itself. I showed him my garden, and told him it was my botanical garden. 'How so?' said he, 'it is covered with weeds.'—'Oh,' I replied, '*that* is only because it is not yet come to its age of discretion and choice. The weeds, you see, have taken the liberty to grow, and I thought it unfair in me to prejudice the soil towards roses and strawberries.'"

MR. SCOTT'S SECOND LECTURE ON ARCHITECTURE AT THE ROYAL ACADEMY.*

In my last lecture it was my endeavour to illustrate the *mechanical* and *structural* portion of the process by which the Romanesque, or round-arched Gothic, became changed into the *Pointed* style; a change which I showed to have resulted primarily from causes purely constructional, and arising from the mere necessities of the case, though subsequently carried on into parts in which the change in the form of arch, though not *statically* necessary, was demanded from reasons of *geometrical* and æsthetic harmony. I further showed that the change was not by any means that abrupt revolution which it is often described as having been;—that a large proportion of the distinctive characteristics of Gothic architecture are common to its round-arched and pointed-arched varieties;—that these two forms of architecture are hardly to be called two styles, but, rather the grand division of one style,—the latter being the natural and logical result of the progression ever going on in the former, during every moment of its prevalence, and in every country where it prevailed.

The portion of the subject, however, on which I then treated, was only the mechanical framework of the style,—its mere ossature to use M. Viollet le Duc's expression, or, as a celebrated palæontologist who did me the honour of being present, said,—the "backbone" of the subject. My object this evening is to over-lay this skeleton with the muscles and sinew, and with the external expressions of its inner life;—to show that those dry bones lived;—or, in other words, to show the changes in the decorative features of the architecture, and in the sculptural art which accompanied it. I have further to trace out the transition as exhibited in the structures of different countries,—and especially of France, England, and Germany;†—and in a general manner to inquire both into their peculiar characteristics, and into the order of their chronological precedence.

The tendency I have so often mentioned to refine and to elevate the character of the Romanesque architecture is common to all the countries where it prevailed. In all we find the severe simplicity of its earlier productions gradually and steadily relaxing throughout the whole period of its history; the rudeness of its early decorations disappearing in favour of a more artistic treatment, its ponderous massiveness becoming lightened, its low proportions changed for more lofty ones, and the general asperity of its character becoming softened down, so that, in its later stages, it seems often to possess nearly every feature of the succeeding style, excepting the Pointed arch and the elevation and lightness which followed its introduction, though it also possessed features which its successor speedily discarded: I especially refer to those systems of ornamentation—most of them of Oriental origin—by which the Romanesque buildings may usually, irrespective of their arches, be distinguished from those of the succeeding periods.

The Pointed arch having, as I have before shown, been first introduced in the vaulting, where its particular statical advantages were most required, it naturally follows that the change would commence earliest in those countries in which the builders set themselves most actively about the solution of the problem,—the steps of which I somewhat at length traced out in my last lecture,—I mean the conversion of the basilica, with its timber roofs, into a completely vaulted structure; and I think that there can be no doubt that that country was France.

This, however, would not be the only condition on which the probable precedence among the different nations in taking the step which was necessary to generating a perfect form of arcuated architecture would depend. It seems necessary that it should *not* be a country already so thoroughly provided with noble churches as to preclude the probability of a great architectural movement, nor one which had already made so determined an effort in perfecting its national style as to have become too much enamoured of its successes to be in a position to strike out boldly in a new line: indeed, it should be a people of so active a spirit, and with so strong a tendency to progress and to change, as to render it improbable that they should ever settle down in quiet contentment with their own attainments. The question as to where the great stride forward was to be expected would naturally lie between France and Germany,—the dominions of the two great successors of Charlemagne in his *kingly* and his *imperial* capacities. Neither Italy nor England was so likely; the former from her too great proximity to classic monuments; while the latter, though her political power was equal to that of France, her continental possessions most extensive, and her architectural strivings most vigorous, had too newly risen from the position of a conquered country to take the first position in such a movement, and was also the less likely to do so from the fact of her builders having for the most part avoided the vaulted construction (on a large scale, at least) from which the first advance was suggested.

The matter lay, then, between France (I mean the actual centre of the Frankish monarchy, of which Paris was the focus), and Germany. The latter, however, had already made her great architectural movement, and was (not without cause), becoming self-satisfied with her achievements. She had generated a glorious style, and covered her land with monuments of which she might well be proud,—while the part of France immediately under the royal power had not yet been able to erect structures of a magnitude worthy of her position as the great representative state of Western Europe. The immense influence gained just at this time by the French monastic establishments, as well as their schools of learning and science, and still more the increase of the regal power, under the wise government of Louis VI., and by the annexation of the Southern Provinces, through the marriage of his successor, brought about the commencement of the great building period in France, a little before the middle of the twelfth century, and the active genius of the people decided the rest. The consequence was, that though the refinement and perfecting of the Romanesque architecture went on uniformly in all the countries I have named, and though its transition into the pointed style is as distinctly national in England and Germany as in France, the precedence as to the *time* at which the grand advance was made must be unhesitatingly awarded—I will not say to *France* (for some parts of it were particularly tardy), but to that district of France round Paris, the focus of the royal power; that portion of it, in fact, which

* Mr. S. commenced by apologizing for a mistake he had fallen into in having attempted to treat in one lecture of a subject requiring several, and for the consequent necessity of curtailing the more important point of his lecture,—its application to practical use.

† The length to which the lecture has extended itself, has rendered it necessary for the present to pass over the German transition with very slight notice.

was immediately under regal government, as distinguished from that of the great vassals of the Crown. We must further in justice admit, that though each country had its own transition, founded directly upon its own national, and even local variety of Romanesque, each was also in some degree tinged and influenced by the early developments arrived at in the royal domain of France.

I wish to be as specific as possible on this point, for the sake of steering between two exaggerated views. The one view is this:—Seeing the transitional style of each country to be distinctly national,—a logical and consistent transition from their own local Romanesque,—to conclude from this that the result was absolutely independently arrived at, though a considerable chronological interval may have intervened: the other is the conclusion, that as the central French architects had been the earliest in systematizing the pointed-arch developments,—all other countries had simply followed in their wake, and done no more than followed the fashions set at Paris. The truth lies between these contradictory views. The communication ever going on throughout Europe caused each country to know pretty perfectly what was going on in others: their Romanesque in each was about on a par as to advancement, and in each the want of the pointed arch must have been nearly equally felt. Each, then, had its national and logical transition; but the French having outstripped the others as to *time*, many of their minor developments were adopted ready-made (if I may say so); so that, though each transition is clearly national and distinct from that of other countries, we nevertheless find both in Germany and England features which have as clearly been borrowed from the French.

The English, though it would appear likely from their adherence to open timber roofs that they would have felt the want of the pointed arch less than the Germans, who more usually vaulted their naves, nevertheless outstripped their more phlegmatic kinsmen in its adoption. This may have arisen from two causes—the constant use in England of central towers the frequent failures of which when supported by round arches would have given them another reason to desire one of greater strength, and also their intimate connection with France and the vast domains in that country which came under the rule of our kings.

It is true that (with the exception of Anjou and Maine) the provinces held by Henry II. were those in which the Romanesque style held out the longest; yet the fact that the two countries were at the time almost as one—the English provinces of France being larger than, perhaps, either England itself or the independent domain of the French king—their ecclesiastical systems intimately united; the French language spoken by all the higher orders in England, who held possessions perhaps of almost equal extent in both countries,—it is hardly probable that the state of architecture should be greatly different in England and in France.

The Normans, however, and the Aquitainians, had both a strong affection for their own Romanesque styles, which had in each country more strongly-marked characteristics than that of the royal domain of France; and this predilection seems to have kept back their strivings for a short time, and to have produced a similar effect in England; which, nevertheless, was the next country to royal France and the parts immediately around it to make the change towards the Pointed style, leaving Germany to come on at the close of the century, when we had already matured our Early Pointed or Early English style, and Italy to adopt it still later; and through the medium of the Germans, as a return for the Lombardic Romanesque, which three centuries earlier she had imparted to Germany, "as if," to use the eloquent words of Mr. Petit, "that mighty river, that bore the tide of Roman civilization into the heart of Europe, had infused into the nations through which it flowed a veneration of Roman memorials; with a wish to preserve and perpetuate them, by establishing, according to the principles of their construction, a kindred and lasting style of their own;" but, as I may add, on finding at length those principles to be imperfect, desired to send back to the source of this early civilization those more advanced developments and increased beauties which these nations had generated from them.

Having thus roughly indicated the national order in which the transition showed itself, I will proceed to describe its characteristics and its productions in these different countries, beginning with France.

I have before mentioned that, in the south of France, there is reason to believe that the pointed arch was used for barrel vaults from an early date; and in the celebrated domical churches of Perigord and Angoumois, it is used below the pendentives of the domes, as well as in the section or the domes themselves: this, if the usually adopted opinion be correct, would bring them into the centre of France, early in the eleventh century. They are certainly found in the royal domain from the commencement of the next century; but it is from about 1140, that we must date their systematic introduction as a fully acknowledged architectural element.

I will not pretend to say what is the earliest work in which they are thus admitted, nor attempt to investigate the commonly received opinion which attributes the launching of the new style (if such it should be called), to Suger, the celebrated abbot of St. Denis. As, however, the architectural progress at this period was clearly most active within the influence of the Court of Paris, and as Suger was not only one of the wisest and greatest men in the kingdom, but was a great minister of State, it is not unnatural that his personal influence upon art should be powerful. In the year 1140, he had rebuilt the nave of his church, and also the west front as it existed previously to the wretched restorations, which have rendered nearly worthless the most valuable landmark in the history of the transition. So far as we can now judge of it, it presents very early transitional characters, the round and pointed arch being almost indiscriminately used. Of the three portals the central one has a round arch, the others are very slightly pointed. Their character is gorgeously rich, the shafts being either elaborately carved with surface ornamentation, or having full-length figures attached to them, and the arches, replete with sculpture, agreeing indeed precisely in character with those of the west front of churches and some others. The parts which are original are beautifully executed, and the capitals are of that perfectly Byzantine variety of the Corinthianesque type, which I shall shortly have to describe more in detail. In the interior, the arches of the vaulting, and those carrying the towers, are all pointed, but contain some strictly Romanesque features. On the whole, the work has a decidedly Romanesque appearance, but nevertheless has the pointed arch so freely used in it, as to show that it was anything but the first essay.

In the same year (1140) Suger laid the foundations of the eastern end of the church, which, as it is said, "with stupendous celerity," he had so far completed by the year 1144, as to permit of its consecration, the king, with his capricious queen, Eleanor of Aquitaine, and a multitude of the great men of the country being present at the ceremony.

Of the church of Suger, the two ends, with portions of the transepts, are all that now remain, the whole of the intermediate portion, forming little less than the entire church, were rebuilt from the ground in the succeeding century, including even the pillars of the apse; so that we are not able to ascertain the design of an internal bay of his church. What remains of the eastern part embraces the pillars round the ambulatory of the apse, with all the apsidal chapels, including also their crypts. Of one of these chapels I exhibit an internal and external sketch. From these it will be seen that though the crypt, from want of height as much as from any other cause, has round arches; the upper chapels are purely pointed, and are very elegant in their design. The pillars are cylindrical, with Corinthianesque capitals, the windows and vaulting pointed, and the whole, though obviously early, has very little of a Romanesque air, much less so than our own transitional specimens of a much later date, and, what is more remarkable, less than many French churches of twenty years later. The chapels, however, in the crypt, are much more Romanesque, all their arches being round, and their vaulting without ribs, though the details agree with those of the chapels above.

The principal remnant beyond what I have here mentioned is the doorway of the north transept. This is pointed, and generally has a more advanced air than those in the west façade, though, on examination, the details differ but little. They have full-length figures attached to the shafts, and angels carved in the arch mouldings, as those last mentioned and as those at Chartres, and such parts of the foliage as have not been renewed, are most beautifully carved in the same Byzantine style. Of the same character, also, are a number of capitals from the monastic buildings, preserved in a neighbouring shed. I have had casts made of some specimens of the carving, which I now exhibit.

I will now crave your indulgence while I make a digression on the subject of the carving in French churches of this period. No one can have failed to notice the Corinthianesque outline of the capitals which prevail in France from early in the twelfth, to the end of the thirteenth century. It has, indeed, been remarked by writers on the subject, that this Corinthian character greatly increased *just before* the period of the transition. Though the effects of importations of Byzantine taste are evinced by Romanesque ornamentation throughout the whole period of its duration, it seems generally to have come in the form of manufactured goods, woven fabrics, jewelry, &c. &c.; and though the patterns, both of Byzantine and other Oriental manufactures, are to be traced in the Romanesque ornaments, and were the origin of many of those most familiar to us, actual architectural features of classic form, such as capitals, do not seem to have been very directly copied, excepting where the remains of antique buildings were at hand to offer models. The Romanesque capitals are, in many cases, of types belonging to no other, though in others they betray a distant descent from the Roman; and the cushion-capital, and perhaps others, seem derived from Byzantium; but generally their forms differ much from the original, till we approach the period of which I am treating, when suddenly they assume an almost classic form,—the acanthus being freely used, and that of a variety resembling that of ancient Greece, as distinguished from Rome; and the same Greek leafage being found in cornices, scroll-work, and almost every other position in which it could be used. Not having travelled in the South of France, I will not venture to be very dogmatic as to the cause of this sudden change. I fancy, from such drawings as I have seen, that this Byzantine capital prevails a good deal in the South of France, but I am not able with certainty to distinguish it from the capitals directly imitated from classic remains around. M. Viollet le Duc views them all as being of this origin, calling them Gallo-Romaine, as distinguished from the Romanesque capitals found side by side with them. I view those, however, I am treating of, as *distinctly Byzantine;* and the following facts suggest a route by which the purely Byzantine foliage may have reached the North of France.

The church of St. Mark at Venice was erected between the years 977 and 1071, and its capitals are many of them precisely of the kind I am naming, and are also identical with many at Constantinople. No one who has had a training in drawing the Corinthian capital will fail to recognise at Venice that variety of acanthus by which he has been accustomed to distinguish the Greek from the Roman Corinthian. According to Mr. de Verneill, the church at St. Frond, at Perigueux, was built at nearly the same time, in the centre of France, but under the influence of Venetian merchants. This church is a direct imitation of St. Mark's, at Venice; but, besides the distinctly Byzantine forms which characterise this and the numerous family of churches which imitate it, it contains capitals of exactly the same kind as those at Venice; and from shortly after this time we find them becoming prevalent in districts where the other Byzantine features of the Perigordian churches are not followed. I give a series of capitals from Constantinople, Venice, and Perigueux, which can be compared with those I exhibit from St. Denis, St. Martin des Prés, &c. &c. to show how indisputable and how direct is the importation, though, unlike the works of classic architects, we find no two capitals alike. They have other points of resemblance to the Corinthian capital, as the cauliculi, and a rudimental relic of the concave-planned abacus. This we find also in Pisan architecture, and in that of the Moors in Sicily, and probably in all styles which were influenced by the Byzantine; and it was, no doubt, derived from the practice which arose when the Corinthian capital began to be used directly to bear an arch (and that *overhanging* the column), of placing a strong square block over the more delicate abacus, to defend it against the fracture to which it would otherwise have been subject. These features will be found in nearly every church of the transitional period in the part of France of which I am speaking, and probably in nearly all parts, excepting, perhaps, Normandy and Brittany.

This Corinthianesque foliage became the originator of the magnificent capitals which pervade the finest French works of the thirteenth century, though the foliage became entirely altered: and in our own country, though the Byzantine original is seen, I believe, only in the work of William of Sens, at Canterbury, the *effects* of it are visible

in the outline of many of our finest Early English capitals, though these are so distinctly national, and differ so much in treatment from those in France.

Nearly contemporaneous with Suger's work, is the west front of the Cathedral of Chartres, one of the very noblest productions of the style. It is not, I believe, exactly known when this façade was either commenced or completed, but the towers were actively progressing in 1145. The three central portals are of peculiar magnificence: they are too elaborate for me to venture upon illustrating them by drawings, but I exhibit some large photographs of the details. I also give a drawing of an enriched shaft, I believe from a similar doorway at Bourges, but which will serve as a type of this mode of decoration. The figures in the jambs are, as was usual at the period, in the same block with the shafts themselves, and their extraordinary elongation, and the long upright folds of their draperies were, no doubt, intended to harmonize with their position as parts of columns. The heads are of peculiar dignity and grace. These doorways are probably the finest remaining of the transitional period. Their excessive richness contrasts strikingly with the severe, though noble simplicity of the remainder of the façade, and displays not only that tendency to lavish all the resources of art upon the doorways which so especially characterize French art, but also illustrates, in the most striking manner, the absolute independence of the architecture upon mere ornamentation, and, at the same time, the freedom with which it avails itself of it; the rich doorways and the severely plain towers being equally glorious specimens of the style, and neither suffering in the least by juxtaposition with the other. I will just call attention to the singular ornamentation of the pedestal or basement of the doorways by means of fluting, &c. This was common in France at that period, though I am not able to trace it to its source. It is almost identical with that of the western doorway of St. Germain des Prés, and we find it carried out with still greater richness in the somewhat later doorways which flank the western façade at Rouen. The capitals in this façade (at Chartres) are of the kind I have above described, though most of them are simpler than those from which my specimens are taken. The southern tower and spire are most noble in their composition, and hardly exceeded in beauty by those of any subsequent period.

The next example I will allude to is the cathedral of Noyon.

The date of this cathedral is unknown; but the old church having been destroyed by fire in 1131, and the bishop (Beaudoin) who shortly after succeeded to the see being an intimate friend of Abbot Suger, it has been put down almost as a historical certainty that he commenced rebuilding the church not long after the erection of that of St. Denis, and that the designs were made under the advice of Suger. I am not prepared either to subscribe to this implicitly, or to dispute it. On first examining the church, my impression was adverse to this theory, but St. Denis itself looks so much later than it is, and the apparent anomalies in the dates of works of this period are so perplexing, that one is disposed to hesitate before disputing a theory supported by such men as Viollet le Duc. If, however, the idea be correct, I should limit the early date to the *lower portion* of the choir. The same intermixture of the round arch with the pointed obtains throughout the cathedral; but not only are the mouldings of later section in the western parts (as M. Viollet le Duc points out), but the capitals which prevail in the upper stories of the choir itself, are of a kind which I cannot think so early as the date assigned.

The capitals of the lower story (or the aisles and apsidal chapels), are of the Corinthianesque description, intermixed with others of interwoven stalks, &c., and are eminently beautiful. I give a sketch of one of the apsidal chapels, both within and without, as a parallel to those at St. Denis. The comparison will certainly tend to confirm the theory as to its date, as the prevalence of the round arch gives it an appearance of even earlier age; but we shall see from other examples that this evidence is not wholly to be relied on.

The plan of this church is exceedingly beautiful, having apsidal terminations, not only to the choir but to each transept. In this it is supposed to have been imitated from the noble transepts at Tournay, with which See Noyon was connected till the year 1153, almost the very year to which both of these works have been attributed, though the transepts at Tournay are still purely Romanesque, and that of the very grandest and boldest kind, excepting only the pointed vaulting, while those at Noyon (which, however, are somewhat later than the choir), are very light, and almost flimsy construction, and though containing many round arches, are in their whole aspect of the Pointed style.

The church at Noyon is of a construction to which I barely alluded in my former lecture; that in which the aisles are of two stories, both of which are vaulted. It is customary to call this second story a triforium; but I should rather term it a *gallery*, for the triforium proper occupies the interval between the roof and the vaulting of the aisle, a space which occurs *over* these galleries: so that a church of this construction has *four* stories—the aisle, the gallery, the triforium, and the clerestory; the triforium being, as its name seems to import, the *third* story, though in churches of the more customary type it is only the *second*. This construction is very common at this period in France and Germany, though in England I recollect only one instance, the choir of Gloucester, which, however, is so altered as almost to conceal its construction. The vaulting at Noyon is Pointed, but its side cells is, I think, in every case round.

The exterior of the apsidal chapels at Noyon is not unlike those at St. Denis, though without its crypt. Like it, it has columns used for buttresses, an idea inherited from those of earlier date, as those at Notre Dame du Pont, at Clermont, at Issoire, and many others.

There are noble portals on the east sides of the transepts, in which the carved foliage is of the most gorgeous description, and which were formerly replete with sculpture, every vestige of which is now gone, having been most carefully cut out at the Revolution. On the whole, this church is one of the best studies of the transition, though defective in one important element—a *date*.*

ARCHITECTURAL EXPERIENCES AT CONSTANTINOPLE.†

I INTEND on the present occasion to state simply, and in as few words as possible, what I saw and what I learnt during the last summer at Constantinople, putting aside entirely the history and antiquities; for so much has been written concerning them that a reference to the various authors would be far more satisfactory to the student than any abridgment I might make.‡

Now the Constantinople of the present day consists of three distinct cities, viz. Scutari, on the Asiatic side; Stamboul, on the tongue of land between the Bosphorus and Golden Horn; and Galata, placed opposite the Seraglio Point. Scutari occupies the site of the ancient Chrysopolis. Stamboul corresponds to the city of Constantine; its extreme point, now the Seraglio, representing the ancient Byzantium; while Galata, although a suburb in the time of Justinian, was only enclosed with walls in the fourteenth century.

Scutari contains but little that is interesting beyond its enormous cemetery, which owes its extent to the belief of the Turks that their European conquests are but temporary; they therefore generally prefer being buried in Asia, where their tombs will remain intact, and not be entirely obliterated, as at Athens, where every vestige of their occupation has been systematically destroyed. The richer Turks, however, mostly choose their tombs in the vicinity of the mosque erected over the grave of Eyoub, the standard-bearer of the Mohammedans in their first siege of the city. Scutari also contains the College of the Howling Dervishes, the large barracks late the English hospital, and the English burial-ground. At present there are no Europeans residing in the town, and everything is Asiatic except the names of the streets written in English.

Stamboul, of course, possesses the greatest attractions of all the three cities, and the first things worthy of notice are the walls surrounding it on all three sides. There is nothing very remarkable in those on the side of the Golden Horn; but on the Bosphorus side a number of small columns have been built in a little above the foundations.

I have often wondered what ever became of the vast number of columns contained in all the ancient cities. It would appear, however, from these walls, as well as from those of Galata, that they were often seized upon as the most compact material whenever the walls of a city had to be erected in haste. The same thing occurs in the fortifications of the Acropolis at Athens, where we see built in a good many of the frustra of the columns of the old Hecatompedon. As to the monoliths of precious marble, they were considered too valuable to break up, and were, therefore, taken from the outside of temples and placed in the inside of churches or mosques.

The walls towards the land side become triple, and are exceedingly picturesque. They also appear to have been more carefully constructed than those surrounding the other sides. The breach where the Mohammedans entered is still enclosed, and, according to the Greek tradition, will remain so, until the victorious Christians shall enter in that identical spot in overwhelming numbers, and drive the Moslem with great slaughter back to Asia, whence he came. As far as I remember the walls are defended by simple battlements, without machicolations. The citadel of Stamboul is the castle of the seven towers, situated at the angle formed by the meeting of the Bosphorus and land walls. There were originally but four towers. Mohammed II. added the other three. The building itself is very picturesque; but, at least in the Byzantine times, could not have been of any great strength, inasmuch as we hear of no stand being made there when the city was finally taken.

The Turks believe that an invisible fairy sits on the top of the square tower overlooking the sea, and holds in her hand a mirror, in which are reflected the images of any eight enemies about to threaten Stamboul.

On the capture of the city, Mohammed took all that part at the extreme point of the triangle for his seraglio, and separated it by another line of walls. Within these everything ancient appears to have been destroyed except the church of St. Irene, now used as a sort of armoury, where the stranger can see the swords of Omar Kaled and other Mohammedan worthies, besides the keys of sundry conquered cities.

Outside the containing wall of the Seraglio is the church of Sta. Sophia, at one period the most beautiful of all Christian churches, and the great pattern for the architects of the Dark Ages. It is not my purpose to enter into a long description of this church, for we have now the works of Messrs. Fossati and Saltzeman; the former giving a series of picturesque views, and the latter measured elevations, sections, &c. Again, owing to the avarice and bigotry of the Turks, the entry is exceedingly costly and difficult; and even when admitted, the time allowed is so short that it is almost impossible to take away anything beyond the most general impressions. It is very true, that during the late war the entry was free, but no sooner had our army withdrawn than all access was closed, except through the means of a very considerable fee to the keepers. Besides, to understand the construction of a building thoroughly, it is necessary to go into the roofs and into the gutters, and there commence one's study. To do this at the present time would be hopeless; and, therefore, with regard to the plan, &c. of Sta. Sophia, I must refer once more to the published works.

The grand feature is, of course, the flatness of the dome, which I am sorry to confess did not at all strike me as an improvement upon the old half-circle. It looks too much like a ceiling; and if it be true what the old authors tell us, that the first dome was still flatter than the present, I fear it must originally have looked still worse. The effect is by no means improved by a great number of internal projecting ribs, which, together with the absence of all figures, except the great figure of our Lord in the centre, make it look very like a gigantic umbrella; but after all, it is just probable that it might be intended to imitate a velarium. The mosaics which decorate the rest of the edifice, are entirely confined to the vaults, domes, and arches, besides the lunettes and pendentives above their springs, and do not come down upon the walls proper as at Monreale and Palermo.

In these decorations figures are very sparingly used, and there are very few groups, and no histories. At present they are all covered over, in deference to the religious opinions of the Mohammedans; but when they were discovered, during the repairs lately executed by M. Fossati, they turned out to be of various dates; some, indeed, being as modern as the Paleologi. Indeed, I am not certain whether any of them was proved to be contemporaneous with Justinian. It is just probable that the originals might have been destroyed during the iconoclastic troubles. The mosaic ornaments which still remain discoverable consist for the most part of diapers, exceedingly

* To be continued.

† The following is the first part of the paper read by Mr. W. Burges, at the Architectural Exhibition, mentioned last week. With the remainder of the paper we shall give the illustrations referred to, and some others.

‡ A very well read-up *résumé* of the antiquities of Constantinople, as well as a list of authors, may be found in the current number of the "Architectural Dictionary," under head "Constantinople."

carefully, and minutely worked: the tesseræ are very small, and the gold placed on a transparent white ground: there is also a great prevalence of silver tesseræ. Now, St. Mark's, Venice, is the only place where we find this silver mosaic, but there the tesseræ are very large indeed; and the whole work executed in a much coarser manner than at Sta. Sophia. At the same time it is only fair to acknowledge that any inferences drawn from the tesseræ sold to strangers by the boys at Sta. Sophia, are liable to great distrust; as I understood they very often derive their supply from other buildings.

The internal walls of Sta. Sophia are covered by a thin placage of the richest marbles, attached by iron cramps. The comparative smallness of these plaques is very successful in giving scale to the building: so that in this one respect, at least, it looks a very great deal larger than that unfortunate St. Peter's at Rome.

The columns of verd antique, porphyry, and granite supporting the arches are part of the spoils of the most renowned temples of antiquity. Some are from the Temple of Diana, at Ephesus; others, again, from that of the Sun, at Baalbec. The latter are of porphyry, and were the dowry of a lady, who made them over to Justinian.

Theophilus, in that part of his treatise where he discourses about jewellery, tells us that the first thing to do is to collect as many precious stones as possible: the Byzantine architects, when they had a building to erect, collected as many columns as possible in a similar manner, without much caring what buildings they destroyed to obtain them.

There is one thing, however, very noticeable about all the columns in Sta. Sophia, viz. that the first member of the base is invariably an annulet of metal. Most probably the column had either fallen or been pulled down with such want of care that the lower extremity was injured: hence the want of the annulet of bronze to keep it firm on the base. The Mohammedans copying the local art, copied also these annulets. We find them almost invariably applied to all the columns in the mosques, even those which were quite new.

The exterior of the church at the present time is plastered and painted, to represent the alternate courses of stone and brick to be found beneath. Mr. Fossati thinks that originally it was covered like the inside, with a placage of marble, which has all disappeared: a fact by no means improbable if the said placage was thin, and simply attached by iron or bronze holdfasts, as we find it at St. Mark's, and at the Fondaco dei Turchi, at Venice, where part of the marble casing has actually disappeared. Now, in the Turkish buildings, where marble is employed, the casing is seldom less than 4 inches and often 6 inches thick, so that with the help of occasional bond-stones it supports itself, and the buildings are thus always in good preservation.

The mosques at Constantinople are exceedingly numerous, but all follow the same plan, which is this:—First of all there is a large enclosure very often occupied by shops and stalls. Within is an oblong mass of buildings, consisting of an arcaded court with a fountain in the centre: this court is called the harem. Then there comes the mosque proper, which may be briefly described as an Arabic copy of Sta. Sophia; while the third division, called the garden, is a walled space containing the tomb of the founder and that of his wife within very rich and beautiful buildings.

Now, it is strictly allowed to sultans only who have been conquerors, to erect mosques, in order that their subjects should not suffer on account of their taste for architecture. No one, therefore, had a better right to build than Mahommet II. the conqueror. Accordingly, there is a large mosque, known by his name, which has a very fine interior, and containing a good many fine monolithes, said to have been brought from sundry Christian churches. However, there is nothing particularly remarkable about this mosque, as it has had the misfortune to be damaged by an earthquake, and beautified and restored during the last century.

But by far the most beautiful of all is the mosque next in order of chronology, built by Suleiman the Magnificent, between 1550 and 1553, and had it the advantage of possessing the mosaics, I should be inclined to prefer it to Sta. Sophia. It contains four of the largest columns in the city, which were anciently used to support statues. The dome has the same diameter as that of Sta. Sophia, and being higher, appears to my mind of a better proportion, looking more like a dome and less like a ceiling. It is in this mosque that we find the beautiful stained-glass windows, which I shall notice further on. Another large mosque, which owes its erection to Bayazid II. is very nearly as beautiful as that of Suleiman. The court or harem, with its porphery and verd antique columns, its incrustations of marble, its fountain, its trees supporting lattices covered by vines, and above all, the large flock of pigeons fed by the alms of the faithful (for the Mahommedans are excessively humane to all animals except man), make it one of the most delightful scenes I have ever witnessed. The only thing at all approaching it, is the west front of St. Mark's, at Venice; but there we are painfully impressed with the want of verdure. Here, on the contrary, we have all, the architecture, the coloured marble, the murmur of the fountain, the trees, and pigeons, besides the bright costume of the women.

The other two great mosques are those of the Sultan Achmed, and of the Sultana Valida. The former, situated close to the ancient Hippodrome, being remarkable for the immense pillars, cased with marble, which support the dome. The latter, although erected about the middle of the seventeenth century, is quite as pure in its details as that of Mohammet II. or Suleiman, for arts and costume change much slower in the East than in the West.

Now, from the architecture of these mosques there is a very useful lesson to be learnt by the architect, and that is how admirably the details are simplified, and how great an effect of breadth is obtained by restraining the ornament to a very few places, such as the caps and cornices, and not covering the whole with reedy mouldings and fizzy crockets, and still more fizzy pinnacles. There is not much to be read about bases, which are generally composed of a few mouldings, the uppermost being, as I said before, of bronze. The shafts are generally taken from old buildings, and, consequently, diminish, a point upon which I would venture to think the Classic architects, were in the right. The cap is round at bottom to suit the column, and square at top to suit the arch. The surface is covered over with the icicle work, so peculiar to Eastern art. Here we see the ornament concentrated, and very sparingly used; but it is the very finest and most careful of its kind. The abacus has a hollow moulding, with a square nosing, and the arch very often comes very nearly flush with the outer edge of it, so that none of the height of the arch is lost to the spectator. In large arches and columns, however, as with us, the arch corresponds with the face of the bell of the cap. The arches have no mouldings at all, but simply plain soffits, and occasionally the voussoirs are of alternate differently-coloured or painted stones. There is no label, properly speaking; but the whole of the spandrils overhang the arch for 1 or 3 inches, according to the size of the building. In small edifices this soffit is left plain; but in great ones there is a moulding, which, at a distance, gives all the effect of a dripstone, without the disadvantage of depriving us of the view of any of the spandril space, as our Western labels do. The effect is to make the whole affair more massive, and to give the arch the idea of having more work to do. I should mention that there are three sorts of arches employed, viz. a stilted drop arch (such as we find used during the thirteenth century in Europe), a sort of four-centred arch, and a segmental arch. The latter is generally used for doorways.

The spandrils of a large arcade, and their sustaining mould are generally of marble, while the centre of the spandril is often occupied by an exquisitely-carved projecting boss, or three circles of inlaid marble, with a little projecting knob in the middle of the whole. Now the carved boss is not an affair of a lot of leaves going out anywhere and in all directions, but a stilted half sphere, with a rigorously-kept surface, indented with a bold and deeply-carved conventional ornament.

As to the cornice, it is formed of a rich icicle ornament, with very little projection. Upon this, if the eaves project, they project very much, so as really to give some shade, and are boarded on the under side, and decorated with paintings. If, on the contrary, the architect used a parapet, he pierced it with an ornament which, at first sight, looks very complex, but which can generally be resolved to the superposition of two or more geometrical figures. Each bay of an arcade is covered by a dome, protected from the weather by lead. In fact, where we should use quadrupartite groining, the Orientals use a dome, and it is for this reason that we see so many in every view of an Eastern city. The dome is finished by a kind of finial, often gilt; but as I was never able to get close to any of them, I am unable to say whether they are executed in stone or wood.

As to the minarets, they are nothing but corkscrew staircases, standing alone. The *winders* go right through the walls, which are about 6 inches thick. Near the *top* is a gallery, supported by corbelling, the ends of the corbel stones being kept down by the superincumbent weight of the upper part, which is merely a repetition of the lower portion, covered with a high pointed wooden roof, leaded. Some minarets have as many as three galleries, and sometimes the corbelling-out is cut into icicle work. Other minarets are made entirely of brick, plastered, and some even of wood; but as I was not able to go inside them, I cannot speak concerning their construction.

There is no feature upon which the Mahommedan architect has devoted greater cost and attention than on his doors and shutters. One of the most elegant that I have seen is at present attached to a tumble-down house at Pera. It consists of two valves, each 1 foot 6 inches wide, made of fir, and covered with massive carving. The panels, with Arabic letters, form the principal feature, and work in very prettily; but in the great mosques we find much more elaborate work. Here the doors are panel-framed; but instead of the space between the rails and styles being filled with a single panel, it is filled up with a multitude of small rails and styles, enclosing minute panels of different coloured woods. In the richest doors these little rails and styles form intricate patterns; and their panels are carved, and occasionally made of ivory, to break the monotony. Marquetry work, of wood, ivory, and silver, is occasionally used, but very sparingly, and generally round the great panels. The doors are all strengthened behind by a strong skeleton framing.

The furniture is bronze, chiselled over with minute patterns, and gilt. Where the plate is pierced the wood behind is painted red, as in the Suleimanyah, or has a piece of red cloth behind it.

A different decoration with regard to the wooden furniture of the mosques was adopted. The desks for reading the Koran, the chests, &c. are made of walnut-wood, inlaid with mother-of-pearl and thin stripes of bone. The art is still practised by the Armenians, who, like the craftsmen of the Middle Ages, have a street all to themselves. At present, however, ornamental furniture is made by entirely covering the wood with mother-of-pearl and tortoiseshell. The pulpit and the more massive furniture, on the contrary, are composed of marble, and decorated with gilding,—in fact, as marble always was decorated in the Middle Ages.

The windows we find filled by round pieces of glass, set in the middle of a plaster framework, about 4 inches thick; this framework being set nearly flush with the external wall. Now, within this, and flush with the internal wall, is another window, composed of small pieces of very thin glass, fastened by means of lime and white of egg to the back of a very intricate plaster framework. Nothing can be finer than the effect of colour produced by this description of stained glass; indeed, I am not quite sure but that our most famous windows of the Middle Ages would suffer by the comparison. The excellence is due, firstly, to the double glazing, which subdues and diversifies the light; and, secondly, to the internal framework, the mullions of which are very narrow, but exceedingly projecting; so that a new effect is produced by every step taken by the spectator, for by reason of the projection of the mullions some pieces of glass are hidden and others revealed. The only mosque retaining its stained glass windows is the Suleimanyah. Some say, but I do not know upon what authority, that they were made by Persian artists brought to Stamboul by Suleiman after his Persian expedition. Unfortunately the mosque of Mohammed, the earliest of all the great mosques, has been so repaired that we cannot expect to find any of this most fragile work. But still it was excessively common in the upper parts of the windows of private houses, and is to be found in Syria and Egypt equally with Persia. If the art was introduced from Persia, it must have ended by becoming indigenous, as there are men who profess to make it at the present day. Upon the whole, I rather suspect that it arose in the imitation of the pierced marble windows in Sta. Sophia, which are supposed at one time to have been filled up with stained glass. Now, although marble is a very good material for simple geometrical forms, yet the labour of piercing an intricate curved pattern, as at the Suleimanyah, would probably be an inducement to execute it in plaster, while the fragility of the new material would be protected by the double glazing.

The patterns of these windows, although to the eye excessively complicated, can be explained by the same principle as the parapets, for there are

several patterns placed one upon another; but the principal pattern to which the most attention was paid was the white. Now, of all the colours employed in decoration, white is the most powerful, and should be used most sparingly. In the window, of part of which Mr. Lavers, of Southampton-street, has executed a reproduction, the white takes the form of a thin flowing line bursting out into leaves of pearls. In the other and more intricate window, of which I have drawn only the centre portion, it is applied as a powdering of flowers more or less frequent in various parts. The same principle is carried out in the frescoes at Assisi · there the white is used only in thin lines, and forms the true division of the pictures. Those who have seen these windows will confess that Aladdin's windows of jewels are no fable, but simply an exaggeration.

I should observe that the lower windows of the mosques, which are very few indeed, are not glazed, but simply protected by an iron grille, and a shutter to shut at night: the sun cannot enter, as they generally open into the arcade.

At Stamboul, as in Italy, all arcades have a thick tie-rod of iron at their springing. This may be justified in a constructional point of view, as tying the buildings together in countries subject to earthquakes. It also enables the builder to dispense with buttresses, which are very often fatal to all breadth of effect. I must confess to admiring the rods in an artistic point of view, as they appear to connect the capitals one with another, and to define the springing of the arch.

Some doors leading to external arcades, &c. are closed by bronze grilles, often of the most intricate patterns, but which pattern may still be explained on the same principle as the parapets, or the stained glass. A good deal of bronze casting is done at the present day in the street round the Soleimanyah.

The last thing I shall mention concerning the mosques, is their excellent and economic method of lighting. Iron bars are suspended from the ceiling by means of chains, the links of which are simply thin iron wire, twisted round several times, and covered with red rosin. The iron bars form various figures, such as intersecting triangles, octagons, &c. Sometimes they run round the building, sometimes between the pillars, and thus define the plan. To these iron rods are hung innumerable small glass lamps, and ostrich eggs, &c. and inasmuch as they are very numerous, and hung very low indeed, the whole effect must be that of walking under a sea of light. I am afraid in our modern buildings we do not light up quite enough, and when we do, it is with flaring masses of gas, which blind the spectator whenever his eye happens unfortunately to catch them.*

* To be continued.

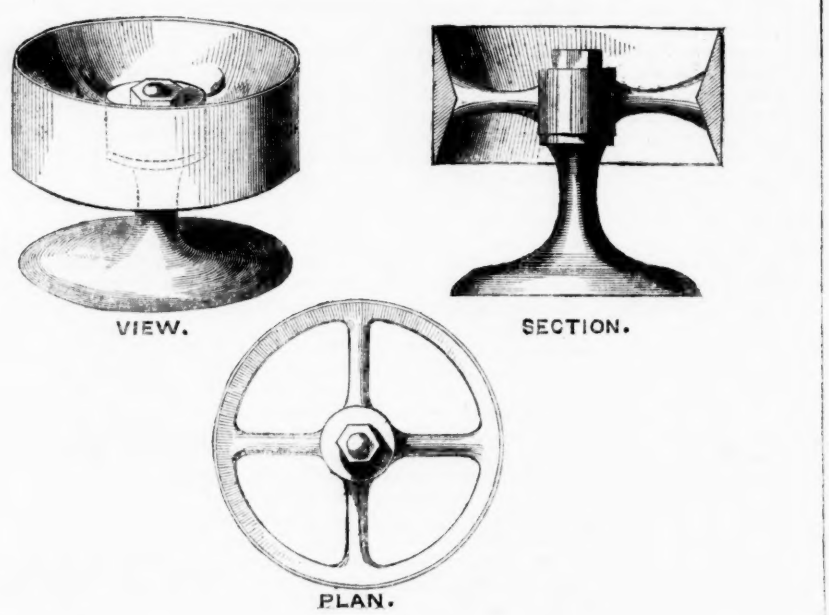
ELECTRO-MAGNETISM AS A MOTIVE POWER.

About five years since you did me the favour to insert some of my letters upon the subject of electro-magnetism as a motive power, in your truly valuable journal. If you can again find room, and will kindly excuse the rough and ungrammatical description of a working man, I shall feel obliged by your insertion of the following. In bringing forward electro-magnetism as the antagonist of steam, as a motive power, we must bear in mind that the former is in its infancy, while the latter has reached maturity, from which we may infer that it is reduced to its utmost simplicity in all its working parts. Electro-magnetic machines are, on the other hand, still far too complicated to be effective, or cheap to purchase, in comparison with the steam-engine. Every exertion is being made in France to introduce electro-magnetic power; and a premium is offered by way of encouragement. In England we have no prizes offered, except for fat cattle, to obtain which noble lords, nay, even royalty itself, have stooped and conquered.

In some respects electro-magnetism must be acknowledged as one of the most wonderful, if not the greatest, motive power in existence. For instance, I wish to raise 1 lb. 1 inch high. I am distant from it 1,000 miles. Would the united power of 100 steam-engines of 100 horse-power each effect this? No. Friction, that powerful opponent, would prevent it. With how much ease could it be effected in an instant of time by electro-magnetism! Simply a wire, in connection with an electro-magnet, the current supplied, the weight is raised; for whether the current of electricity traverses a circle of 1 mile or 1,000 miles, there is scarcely any perceptible difference in the time occupied in performing either journey. Surely something can be made out of this wonderful deviation from all other known mechanical actions, where every increase of speed must have a corresponding expenditure of power.

I beg leave to repeat that which I stated five years since in your columns. I can construct an electro-magnetic machine, composed of two small magnets, communicating direct rotary motion without the aid of wheels, pinions, crank, or piston (with the exception of three very small wheels to work the break). To its powers there can not possibly be any limit, as that is entirely regulated by the construction of the engine, its power being according to its size: hence six jars, Smee's battery, would raise 1,000 tons, if tackle sufficiently strong were provided. To accomplish this, I merely take advantage, in my arrangement, of the incalculable velocity of electricity to obtain motive power. I do not presume to say that I am prepared to supersede steam as a motive power, but that I can economically introduce electro-magnetism as a motive power, where the steam-engine, from great first cost and continued expense from wear and tear, and last, not least, its great danger, would point out the advantages to be derived from electro-magnetic machines or engines.

Methinks I hear you say, "How is it you have not brought out an invention so valuable as you describe?" If you will please, kind sir, to refer to your columns five years ago, you will find I stated I was a poor working mechanic. I am still that working mechanic, five years older and a great deal poorer. I hope you will consider my answer a sufficient reason. H. Z.



A SCRAPER.

A SCRAPER.

The accompanying figs. show a scraper, descried the other day somewhere in Austria, by my friend Mr. Shanks, engineer, who has a way of travelling with his eyes open.

It consists of a pulley, about 11 inches in diameter by 4½ inches, mounted and rotating on a stand affording a vertical axis. Further descriptive verbiage would be superfluous.

Pity we are not in a position to couple with honourable mention the name of the ingenious inventor thus mindful of the common weal.

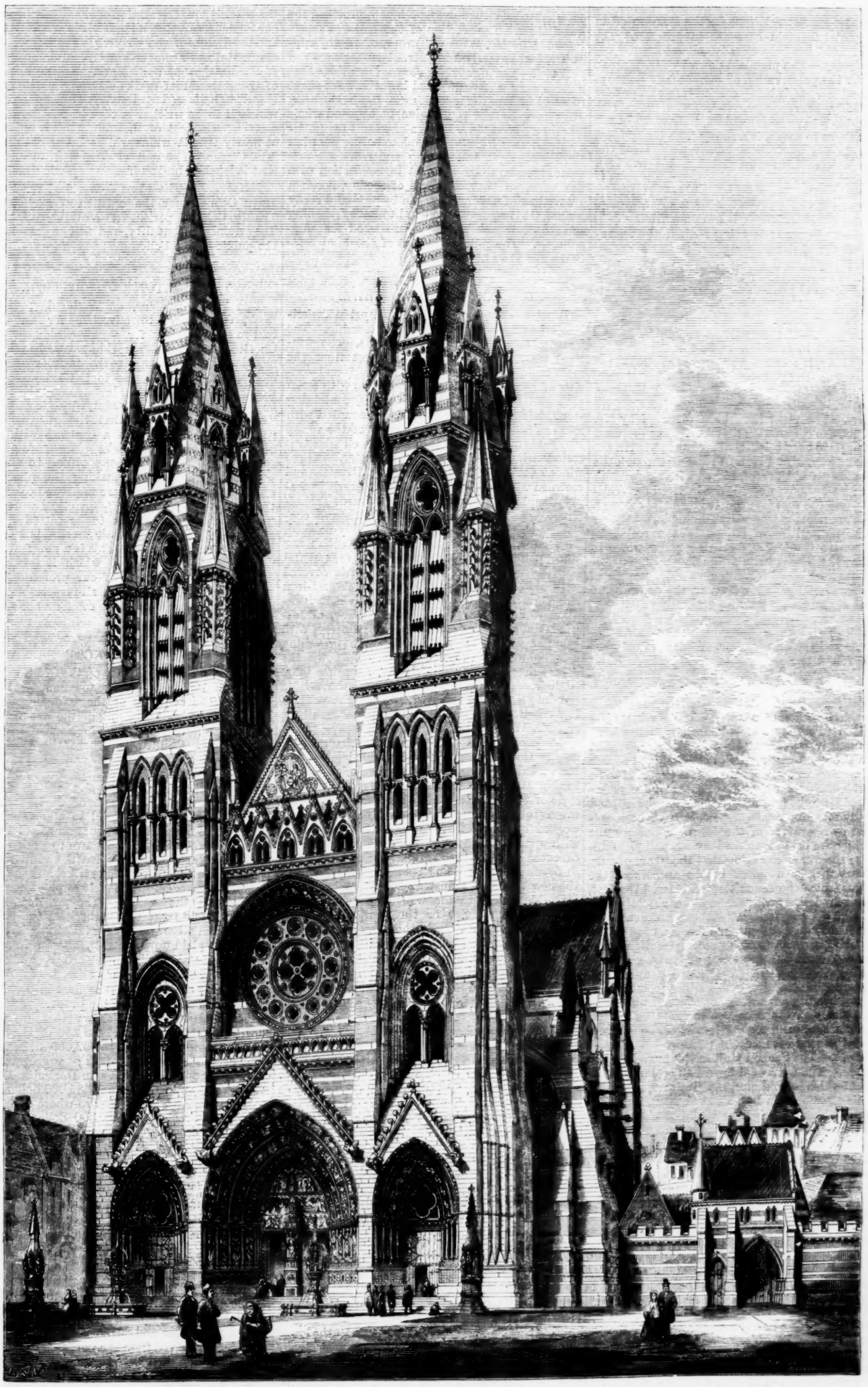
James Wylson.

SECOND REWARDED DESIGN FOR THE PROPOSED CATHEDRAL AT LILLE.

Mr. Street's design for the cathedral at Lille gained, it will be recollected, the second prize in the European competition in which it was submitted. The first three prizes were given respectively to Messrs. Clutton and Burges, Mr. Street, and M. Lassus. "Of these three plans," the judges state in their award, "one is conspicuous for a singular union of precedent and originality; the other for the manly energy of its design; the last for judgment and taste." Proceeding to notice in detail the second design, which they pronounce to be "treated with a remarkable energy and *élan*," wanting in the design to which they awarded the first place, the judges say, "To a profound knowledge of Pointed art its author adds a rare power of conception, which is shown as well in the details as in the *ensemble*. We recognise here, at first sight, the work of a great master. In particular, we must fairly congratulate the author on having complied with all the requirements of the programme, and on having faced more boldly than any other competitor the difficulties of employing brick as the material of a monumental edifice. If power rather than grace is the general characteristic of this magnificent creation of art, elegance finds its due place in the *ciborium*, in which it is combined with a true splendour of ornamentation. After a lengthened consideration, we have unhesitatingly raised this design to the second place; and little was wanting to its mounting to the first."

The towers and spires represented in our engraving were designed to be about 290 or 300 English feet in height. Their conception and planning are, as the nature of the work required, rather in the French manner, but at the same time the result is unlike any old French example. The architect's idea seems to have been to make the towers as high as possible, in proportion to the spires, in order to raise the belfries well above the roof—an invariable rule in all good steeples; and yet, by converting the belfry-stage into an octagon, the composition of the spires is brought down and blended with the towers, so as to diminish the apparent disproportion between the tower and the spire. The large rose window in the west front opened into the nave, and on each side, and below it, was arranged the great organ. One noticeable feature in the design, was the use of the same materials—red brick and stone—for the inside as well as the outside walls. The shameful end of this competition, which at first seemed to promise so fairly, is probably not generally known. The committee have preserved the designs, but rejected their authors; and we learn from a recent number of the *Ecclesiologist* that they are now constructing the church in a sort of hodge-podge, concocted from the first and second designs. The author of the latter has had the misfortune to be the first to be operated upon, and, under pretence of copying the cloister and buildings surrounding it, which formed part of his plan (seen to the right of the church in our engraving), they are erecting a wretched caricature with bad detail, rustic quoins, and other alterations which entirely ruin the effect of the building.

A Stained Glass East Window for Worcester Cathedral.—A meeting was called by the mayor last week, at which it was resolved, with the consent of the dean and chapter, to open a subscription for the insertion of a stained glass east window for the cathedral. The cost has been estimated at 1,050*l*. The dean and chapter have no funds for the decoration of the edifice, but they have expended 8,200*l*. within the last three years in restorations and repairs.



THE SECOND REWARDED DESIGN FOR THE PROPOSED CATHEDRAL AT LILLE.——MR. G. E. STREET, F.S.A. ARCHITECT.

PROVINCIAL NEWS.

Banbury.—Subscriptions for the erection of an ornamental fountain here are in progress. The sum of 140*l.* has been already collected.

Brighton.—The plan laid down by Mr. Wright, C.E. for the preservation of our sea-frontage, says the local *Herald*, is being carried into effect under Mr. Oddy, surveyor *pro tem.* The groynes at Kemp-town have been repaired, and a second bank of beach, so to speak, is forming from Kemp-town down to the pier. Some fresh portions of the groynes have been washed away, but not to a sufficient extent to impede the general progress of the work. Rough weather has also delayed Mr. Fabian in the commencement of the new groyne opposite Junction House, beyond the driving of a few piles. Progress is being made in the formation of the sheltered walk under the sea-wall, which it is proposed to extend as far as Kemp-town. The removal of the battery is being proceeded with: the town contractor's men are levelling the ground, so that it may be thrown into the western promenade.

Stockport.—The committee appointed by the local council to establish baths for the working-classes have, it seems, agreed upon the site,—that of Lawrence-street, behind the Unitarian church, St. Peter's-gate,—and upon the style of building, and other details, and accordingly advertised for tenders. The plans have been prepared by Mr. S. Hunt, the corporation surveyor. The proposed building is to be of brick, timbered and slated in the ordinary way, with a lantern running through the whole length of the roof, glazed with thick rough plate-glass. Louvre boards are inserted for ventilation, and the roof is supported by metal columns. The arrangements internally are simple, consisting of one flat, with excavations in the rock. In addition to the boiler for heating the water in winter, there will be a swimming-bath, 50 feet 7 inches long by 33 feet 5 inches wide, capable of holding 47,400 gallons of water, the depth being 3 feet at one end, increasing gradually to 6 feet at the extreme. Several dressing-closets have been provided; and six washing-baths, one half being private and the other public. A platform of wood runs round the room. No warm baths (private) have been contemplated. The water will be supplied by the local Waterworks Company.

Halifax.—Some months ago steps were taken for the erection of a suite of public baths for Halifax. The site selected, and which has been gratuitously presented by Mr. Frank Crossley, M.P. is on the south-east corner of the Halifax People's Park. The cost of the erection is expected to be about 5,000*l.* The expense of external decoration (1,500*l.*) is to be raised by public subscription, and already some hundreds of pounds have been collected by a canvass of the town. Plans for the building are being furnished by competing architects; the conditions being that the "sum of fifty guineas will be awarded to the authors of the designs which the committee considered the best, and such designs will become the absolute property of the corporation." About a dozen architects had sent in designs, in a few days to be open to public inspection. The accommodation to be provided includes a first-class and a second-class men's swimming-bath (tepid), and a number of slipper-baths; together with waiting-rooms, water-closets, heating apparatus, superintendent's house and office, and other conveniences. The designs of the unsuccessful competitors are to be returned when the award is made.

Blyth.—The Central Hall in this town has been opened. The want of a town-hall or large building, in which to hold meetings, lectures, and other public assemblies in Blyth and Cowpen, induced a few individuals to originate a joint-stock company, the shares being 1*l.* each. These were soon nearly all taken up, and a site for the building was given by the trustees of the Thoroton and Croft estates. The structure itself, which is built of brick, is situated in Waterloo-place. The cost of its erection will be about 1,200*l.* The hall designed for public purposes is 76 feet long by 38 feet in width, and 18 feet in height. The walls at present are only plastered over. It is intended, however, to panel the whole. It is calculated to accommodate 1,000 persons, and, except St. Nicholas-square new buildings, the Music-hall, and Lecture-room, in Newcastle, is one of the largest in the district. At the west end of the room is a gallery. On the ground floor is a news-room, thrown open for the use of the public. There is also another room on the same floor, suitable for lectures and similar purposes, estimated to hold about 200 persons. The structure was designed by Mr. Jackson, of Newcastle, and the mason work was executed by Messrs. J. and E. Nairn, Amble. Messrs. J. and W. Armstrong, Bulman's Village, were the joiners; Mr. John Thompson, the plasterer; and Messrs. Henderson and Thompson, of Blyth, provided the gas-fittings. The erection of the hall was superintended by Mr. William Turner, of Blyth, ship-owner, and formerly a builder.

Banff.—The *Banffshire Journal* mentions that a copartnery of foreign wood importers are about to erect a large saw-mill near Banff Harbour. They have bought the engine, boiler, and whole machinery of Messrs. Lobban and Co.'s Longmuir saw-mill, near Huntly. Complete boring gear has already been got, and planing and mortising machines are also to be wrought in connection with the mills, so that all sorts of roofing, flooring, grooved and feathered, &c. can be produced ready for use. It is also contemplated to have trenelling and block machines to prepare wood for ship-building. The mill is the first of the kind established in the town.

CHURCH-BUILDING NEWS.

Ipswich.—The Congregational Chapel in Tacket-street has been opened for public worship. The new building is in the decorated style. The principal entrance projects about 12 feet from the main building into the open court-yard, and consists of an open arcade of three arches with canopied gablets, flanked by two turrets, containing stone staircases to the gallery, surmounted with stone spires 65 feet high to the top of the vanes. The gable over the arcade contains a circular traceried window, 10 feet in diameter. Three windows, 20 feet high, between buttresses, and crowned with moulded cornice and traceried parapet, complete the south elevation, towards Tacket-street. The three other fronts, although consistent in character, are not so highly-finished. The external walls are faced with Kentish rag stone, pointed with blue mortar; the ornamental portions with Caen stone. The roof is covered with slates, finished with ornamental cast-iron ridge crest. In the west end there is a stained-glass window, erected by Mr. D. Haggar, of Ipswich, and consisting of flashed blue quarry, with cut flower and ground border; the prevailing colours blue and ruby. There are no pews, the seats being stained open benches, affording 1,200 sittings. The houses which obscured the former building have been removed, and a light palisading substituted. Mr. Barnes was the architect, and Mr. Whight the builder.

Godmanchester.—The three-light chancel window of Godmanchester church (Huntingdon) has been filled with a stained-glass memorial window to the late rector, the Rev. Charles Gray. The style of the window is early English: it contains seven subjects from the life of our Lord, and worked on a rich mosaic diapered background, with appropriate border. The window has been executed by Mr. Charles Gibbs.

Lyminge (*Kent*).—The operations for erecting the new Wesleyan minister's house here have been set aside, owing to the want of a unanimity of feeling amongst two or three of the leading members of the society in this place. Nearly the whole of the amount required for its erection had been promised, and a liberal donation had been offered on the part of Mr. J. Diggle, consisting of the timber to be used throughout. The building would have been erected in red and white brick, from designs by Mr. A. Laver, architect.

Preston.—An accident occurred last week at the new Baptist chapel, in Fishergate, Preston. The rope which was being used in hoisting a large cornice-stone upon the tower of the chapel broke, and the stone fell to the ground from a considerable elevation. Fortunately, however, no person was injured.

Silkstone.—A stained glass memorial window has recently been placed in this church by Mrs. Clarke, of Noblethorpe Hall, near Silkstone. The chancel has been rebuilt, and other improvements made in the church by the same lady. The window, which is at the east end of the chancel, is of the transition period from Early English to the Decorated style, and has five lights in the Perpendicular style. The painting of the window has been executed by Mr. O'Connor, of London, and consists of Mediæval figures. In the upper portion of the lights groups of saints are represented, in attitudes of adoration, to the right and left of a figure representing our Lord coming in glory, with the earth as his footstool. In the lower part of the lights are five representations of our Saviour when on earth,—being scourged, bearing his cross (surrounded by soldiers); upon the cross (this is the middle light); the descent from the cross, and his burial. On the right-hand wall of the chancel are two other new stained glass windows. One is divided into two compartments, with representations of St. Luke and St. John: the other is a representation of the Good Shepherd, our Saviour, carrying a lamb in his arms. At the left-hand side of the chancel is another window, divided into two compartments, containing figures of St. Matthew and St. Mark. At the terminus of the stained roof of the chancel, in a line with the corbels, is a broad string of deep blue, on which is to be written a text in Mediæval characters. The cost of the alterations is estimated at nearly 3,000*l.* which will be borne entirely by Mrs. Clarke. The east window is in memory of that lady's late husband.

Edinburgh.—The plans (advertised for by the Town Council) for the erection of a church in Trinity College parish, have all been sent in. They number about fifty, and will be exhibited to the public in the Police Board-room.

THE BOLTON COMPETITION.

THE local guardians, on Wednesday, in last week, determined to advertise for an architect to prepare plans for a new workhouse,—the Chorlton and Barnsley workhouses to be taken as models; the former as to the interior arrangements, and the latter as to the exterior;—the workhouse to be for 1,000 inmates, and the cost to be 18,000*l.* The advertisement, which is addressed "to architects," states that the guardians are "prepared to enter into a contract with some competent person, to make plans and general specifications," and "persons willing to contract with the guardians for making the plans and specifications referred to, are requested to send in their terms to the clerk;"—in other words, the "competent persons" are to be pitted against each other not only on their merits, but on the score of cheap "terms." This is a new feature in architectural competitions, which has naturally excited the ire of several of our professional correspondents, and it behoves all respectable architects to be wary how they countenance such an insidious system.

AMERICAN NOTES.

A STRIKE has taken place on the Cincinnati and Marietta Railway, owing to nonpayment of wages. The *employés* of the company were in open rebellion at the leaving of the last mail, and the engineers, firemen, and breaksmen had congregated at Chillicothe, where the workshops are located and the engines and cars repaired. They took possession of the shops, locked up every engine in the round-house, and as fast as the trains arrived, for a couple of days, took the engines and cars, and refused to allow them out again. The number of engines now held by the strikers is fifty, leaving only two to work on the road, which are totally insufficient, and all business is stopped. 200 men are on strike, and they hold forcible possession. The telegraph-wires have been cut by the strikers. The president of the road notified to the city authorities the circumstances, and steps were being taken to compel the strikers to yield up possession, and to arrest the leaders. Great excitement prevails, and much resistance, and perhaps loss of life, are expected.

A tabular statement of the fires in the United States, where the value of the property destroyed exceeded 20,000 dollars, shows that up to the 25th December there had been 230 of these fires, and the aggregate loss 15,792,000 dollars. In 1856 there were 227 fires; aggregate loss, 25,150,000 dollars. The loss in December alone—the least of any month—was 485,000 dollars. In addition are the losses by fire where each, individually, did not exceed 20,000 dollars, and the aggregate is increased to *twenty-seven millions in 1856, and to twenty millions in* 1857.

The president of the New York and Erie Railroad is said to have set out on a special journey to the King of Prussia, to raise money, to save the company from insolvency. It is understood that the king holds 1802 bonds, to the extent of 1,000,000 dollars.

Mr. B. Townsend Mix was the architect who designed and superintended the erection of the Newhall Hotel at Milwaukee, described in a previous number of the *Builder*.

The Asbury M.E. Church, Fifth-ward, Milwaukee, was dedicated on Sunday, January 17.

The La Crosse and Milwaukee Railroad Company have received from the governor of the State of Wisconsin a certificate that forty miles of the land-grant road is completed, and the company entitled to 230,000 acres of land. Some twenty miles more of the same road is under contract, and progressing rapidly to completion; to be finished on the 1st of March, and entitling the

company to 76,800 acres of land; making in all 307,200 acres the sole property of the company.

A monument to Ethan Allen is proposed by the Vermont Legislature, and will consist of a colossal statue of the hero, on a Tuscan column of granite between 40 feet and 50 feet high; the corner-stone to be laid on the 10th of May, the eighty-third anniversary of the surprise and capture of Ticonderoga.

The number of emigrants landed at New York during 1857 was 185,847, of whom 29,502 were from England, 62,098 from Ireland, 5,063 from Scotland, and 910 from Wales. Germany is highest on the list, numbering 78,800.

A monument, in imitation of a snow-peak, of immense height, and of white marble, of irregular shape, with four tablets in the base, appropriately inscribed, is proposed to be erected in the small park in front of the Cooper Institute, Milwaukee, in honour of Dr. Rand, the Arctic explorer.

A QUARTERLY ACCOUNT.

THE cost of crime is, we fear, much greater than that sum which is grudgingly bestowed upon the schoolmaster; and some who have not thought of the matter will feel surprised at the annual bill which is charged for the custody of prisoners who are confined for offences in Middlesex:—

Between the 7th of October, 1857, and the 2nd of January, 1858 (about three months), the Lords of the Treasury returned about 1,997*l.* 16s. 7d. for their share of criminal prosecutions. In this item is included prisoners under the Excise law, military prisoners, &c.

The House of Correction in Coldbath-fields costs in general expenses for the quarter, 8,772*l.* 10s. 9d.; Tontine Annuities, 256*l.* 3s. 8d.—in all 9,028*l.* 14s. 5d.

At the House of Detention, Clerkenwell, the general expenses and interest of money amounts to 2,231*l.* 9s. 3d.

The House of Correction, Westminster, costs 8,282*l.* 14s. 2d. In addition to the sum returned by the Lords of the Treasury, 550*l.* 19s. are paid for witnesses, prosecutions, &c.: altogether this amounts to 22,190*l.* 13s. 5d.; in the year to 88,760*l.* 3s. 8d.

From this must be deducted—

Materials worked up at Coldbath-fields	£638	5	7
Ditto at Westminster	153	1	8
Work done by vagrants	0	1	4
Garden produce, Westminster	1	5	4
	£792	13	11

Or 3,170*l.* 15s. 7d. a year. The total annual cost of the prisoners who are lodged in Middlesex amounts to 85,589*l.* 19s. 1d.

The interest of money granted to the Industrial Schools of this *populous county only amounts to* 167*l.* 3s. 4d.

In looking at the above account it should be borne in mind that it is only a portion of the great cost of crime in a certain district, for there is in addition the expense to the country at large of transports, police-rates, the pauperism of numbers of those connected with prisons, &c. Surely these figures should incline us to let the schoolmaster have fair play; and it is well worthy of consideration whether it might not be advisable to increase very much the small sum which seems to be set apart for the help of Industrial Schools.

CONDITION OF LONDON STREETS.

THE condition of the foot-pavement of the streets of London at this and even other seasons of the year, after a slight fall of rain, is both unpleasant and uncomfortable. Those who, for the sake of health or other considerations, wander on foot from the various suburbs to their business in town, complain with reason of the slippery mud which makes onward progress difficult. In the centres of the streets the scavengers may be seen busily at work sweeping up and carrying away the accumulated refuse; but on the footways, for weeks together, in not one instance in a hundred is there any attempt to prepare for a drizzling rainy day by the vigorous use of the broom and scraper. Owing to the want of simultaneous action, the good intentions of the cleanly people are made of no effect, by the treading of the mud from other parts.

After a thunder-storm and a deluge of rain (for it requires that), it is agreeable to go forth into the streets and see the clean colour of the pavements freed from all impurity; and how pleasant it would be to find them at all times in something approaching to the same condition! and this could be in a great measure effected by the careful sweeping of every house and shop front once a day. The police have, we believe, power to carry such a measure into effect, but refrain from acting, except in snowy weather. It would be for the benefit of all to have a general daily footpath cleansing carried out throughout the extent of the metropolis. It would be good for shopkeepers, and decidedly advantageous to every pedestrian, not to mention the great improvement which it would make in the appearance of our thoroughfares; and, with a little consideration, it might be the means of giving employment to a very large number of the description of boys for whom it is necessary to provide employment: for instance, arrangements might be made with managers of ragged schools and certain of the house and shop keepers to regularly perform this duty. Or this work might be done by adding it in some way to the duties of the crossing-sweeping brigade which has been lately established. In other ways, it might be the means of affording a large amount of employment to those who are not usefully occupied in the morning.

The foot pavements round the gardens of the squares, round large mansions, churches, and prisons, are generally in the worst condition, to improve which measures should be taken.

Few can pass through the various neighbourhoods of London without noticing the differences of the manner in which the scavenging work is done. Within the liberties of the City this important work seems admirably performed. The task is, however, easier there, owing to the small extent of macadamized pavement which is in use.

ROYAL DUBLIN SOCIETY.

THE building operations of this body during the spring and summer promise to be extensive, for we find that steps are being taken for the immediate commencement of the National Gallery of Painting, Sculpture, and the Fine Arts, and for the reception of Archbishop Marsh's library (hitherto located near St. Patrick's Cathedral), which is to occupy a position on Leinster Lawn, forming a corresponding wing, and in strict uniformity, externally, with the Society's new museum. The architect is Mr. Charles Lanyon, of Belfast, and the objections raised with reference to the original designs, furnished previous to December 5th, 1857, have been surmounted, and the amended plans fully approved of. The building will be faced with chiselled granite stone, having rusticated basement, string courses, pedimented niches, projecting roof, with ornamental eave course, and lantern running through. Messrs. Cockburn and Son are the contractors, and the same firm erected the museum, and have also commenced operations in re-arranging and roofing the cattle-yard, which it is said will cost 6,000*l.* though the instructions to competitors stated 2,500*l.* and the design acknowledged publicly to have been "the best" in the first competition already mentioned, was rejected in consequence, as it was alleged, of the amount being exceeded. In the second competition, the author of the approved plans procured a builder's tender to execute the work for the stipulated sum, but the premium in this case was not awarded either. We find now by a resolution of the Society, dated January 7th ult. that "the Committee of Council appointed to obtain plans and estimates for covering in the Cattle Show-yard of the Society beg to report that they have approved of the plans of Mr. F. V. Clarendon, which had been with others sent in for competition." A correspondent urges that Mr. Clarendon's name did not appear as the successful competitor in either instance.

GLASGOW ARCHÆOLOGICAL SOCIETY.

THE February meeting of this society was held on Monday, the 1st inst.; Mr. Neil in the chair. Mr. Laurence Hill read and exhibited several interesting original letters, among others one written by John Earl of Marr, Regent of Scotland, dated 12th September, 1571; and another, with the superscription of James VII. dated from Dublin, 29th March, 1689, desiring assistance, and promising reimbursement of all expenses, and that "we will stand to our former declarations in favour of the Protestant religion, the liberty and property of our subjects, all which we will justly secure to them," &c.

Mr. Rochead read a paper on some of the more ancient examples of our ecclesiastical architecture, which was illustrated by several drawings.

Mr. Baird read a short description of St. Blane's Church, on the Island of Bute, several drawings of which were exhibited. He believed that the building belonged to the first half of the twelfth century. The chancel arch is remarkably small, being only 6 feet 4 inches from the bottom of the base to the top of the abacus; the total height of the opening being 8 feet 7½ inches. Alluding to a building in the immediate vicinity of the church, which by some was supposed to be the remains of a Druidical temple, he said that he considered it to be the remains of one of those remarkable circular domical buildings found in some parts of Ireland. The walls are 8 feet thick, built of large blocks of stone, without mortar. He had no doubt it was the cell of the original founder of the church.

Mr. Honeyman earnestly urged upon the members the duty of making a vigorous effort to preserve from oblivion the remains of our national architecture. What we wanted was not mere vague descriptions and picturesque views, but the plans and sections, the mouldings, and the sculpture of our ancient edifices, civil as well as ecclesiastical; and while, perhaps, the cathedrals and abbey churches afforded the most inviting field for study, he would warn the members against slighting the humblest vestige of mediæval art. He believed that the society could engage in no work which would prove so interesting to themselves, and so valuable to their brother archæologists in other countries, as that to which he had referred; and he hoped that the transactions of the next session would bear evidence of the zeal with which the good work had been pursued during the summer which was now approaching.

Dr. Stewart exhibited several Roman antiquities found in the vicinity of the Roman wall, near Glasgow.

DECISIONS UNDER METROPOLITAN BUILDING ACT.

I SEND you a case under the Building Act, heard on Tuesday last, at the Southwark Police Court. It involves one of the most important provisions of the Act against fire; and I think it ought *not* to have been met—especially after a pledge given to the contrary by the defendant's architect—by a plea that the works do not yet constitute a building because the roof is not yet on. I confidently submit that a member of the Metropolitan Board of Works, aided by a district surveyor, ought not to have met the case in this manner, but on a fair argument on the substantial question to be raised, and which is now only postponed to a period when its decision may involve the defendant himself in much unnecessary trouble and expense.

I would beg also to call to mind that the Metropolitan Board of Works publicly censured a district surveyor for not having enforced a provision of the Act until the roof was on; but it is only fair to add that the defendant was not then a member.

One of the most obvious errors committed by the framers of the present Building Act was that of abolishing all means of obtaining a decision as to the legality of any work *before* it should be carried into effect, and perhaps have to be remedied at great additional cost. In endeavouring to render that error as little inconvenient as possible, it is clear that a district surveyor ought to be assisted by those who are chiefly benefited, and especially when they are members of the board under whom he holds office.

ROBERT HESKETH.

DIVISION OF WAREHOUSES, SEC. 27, RULE 4.

MR. ALDERMAN HUMPHERY is building a warehouse, corner of Mill-street and Compton-street, on the site of the Old Borough Compter. It is intended to be, according to the notice given to the district surveyor, 71 feet high from the lowest floor to the tie-beam, and covers an area of 6,227 superficial feet. The inclosing walls having been carried up 40 feet, and the ground and one and two-pair floors having been formed so as to show clearly that the capacity of 216,000 cubic feet was already exceeded by 35,080 cubic feet, without being divided by party-walls, as required by the Act, into divisions not exceeding such 216,000 cubic feet, the district surveyor deemed it his duty not to wait till the warehouse should be carried to its full height and be covered in, but to raise the question at the earliest possible moment.

At the hearing at the Southwark Police Court, on Tuesday, 2nd inst., he proved the above facts, and moreover showed that not only was no party-wall commenced, nor any intention shown of building a party-wall, but that if a party-wall should be built at a future period, it could only be done by removing and altering, at considerable expense, part of the works now being carried out. It was proved also that the lowest story was already used for storing oil-casks.

The notice given by the defendant to the district surveyor was also put in as *primâ facie* evidence (under sec. 40 of the Act), of his intention therein stated that the building should be 71 feet high, and that it should be a warehouse; according to which intention the capacity would be 442,117 cubic feet, or more than double that allowed by the Act.

Mr. Snooke, a district surveyor, appeared for Mr. Alderman Humphery, and was directed by him to put in the

plea that the work did not constitute a building till it was covered in, and could not be proceeded against by the district surveyor.

On the magistrate (Mr. Burcham) intimating his opinion in favour of that view, Mr. Hesketh said he should not press the case, as he was aware, and had told Mr. Humphery so, that he could not raise the question if that objection should be taken; but that Mr. Snooke had requested him, *before* the summons was issued, to raise the question as early as possible, promising that no such objection should be raised, but that the case should be decided upon the substantial question, which was, whether fire-proof floors may be allowed instead of party-walls to subdivide warehouses, under the 27th section of the Act.

APPEAL CASES UNDER THE BUILDING ACT.

Recent decisions—some conflicting—by police magistrates and the Court of Queen's Bench on these matters only establish clearly the necessity of a "Court of Metropolitan Buildings," as proposed by Lord Seymour, to adjudicate on points requiring a certain amount of professional knowledge and acquaintance with building operations, adequately to dispose of cases that cannot be satisfactorily dealt with or understood by a tribunal having no acquaintance with or knowledge of "building."

Apart, however, from this fatal and inherent defect in the tribunals appointed to decide on and adjudicate in "Building Act matters," some recent cases appear to have been decided in a manner wholly irreconcilable with law or fact, as in Mr. Badger's case, wherein you very forcibly review the decision arrived at, as presenting anomalies only to be accounted for by the supposition that these matters were not properly before the Court. The main point of interest was whether the work was a "repair affecting the construction," or a necessary repair *not* affecting the construction. A brick pier is taken down and rebuilt, and in rebuilding also reduced in width. This brick pier obviously supported the superincumbent work, and, as you very properly remark, how is it possible to take down and rebuild a wall, or portion of a wall,* without, as in this case, materially affecting the construction of such wall? An appeal to any architect, or even disinterested builder, would but elicit one reply to such a query. Or suppose such a query addressed to any person ordinarily conversant with building matters. Some confusion has been occasioned by the word "repair," or rather by the loose manner in which this expression has been used. In all cases where the repair affects the construction, a notice is, under the terms of the Act, essential.

In underpinning a wall or pier, or the formation of openings in it, by cutting away any part of it for openings or enlargements of existing openings, the construction of such wall is thereby materially affected.

Take the case of the removal of decayed or defective story posts, in which case a house might be let down for want of sufficient shoring.

The point at issue, it cannot be too simply stated, is, not whether it be a *repair* or not, but whether it be a repair affecting the construction, or a repair *not* affecting the construction; in which latter case it would be exempt. By repair, however, not affecting the construction, the House of Commons' Committee clearly stated a *surface* repair.

Cavendo Tutus.

MILITARY ENGINEERING.

With reference to the letter of "C. E." in your paper of December 12th, it may be that "C. E." will be surprised to know that there are a large number of servants of the Crown in this same Royal Engineer Department (contemptuously styled clerks of works) who have frequently to submit to more indignities than that of being placed under the control of the most junior officer of the corps, mere school-boys, without whose services not a single project, either new works or repairs (excepting field works), can be matured, either as regards the plans, specifications, or estimates; and, strange to say, that such is the treatment these most practical architects and engineers are subjected to, that the fair copies of the estimates sent to Pall-Mall have their names, with the most sedulous care, excluded therefrom; and the officers who generally make the tracings of the plans for the fair copies of the estimate are allowed, it might be said instructed, to sign the tracing, omitting entirely the name of the clerk of works who produces the original plan.

In regard to the proposition of having a military architect appointed as resident over a district, "C. E." seems to come pretty near in principle to what is most essentially required in that branch of the public service: for there is no doubt that the very frequent changes of engineer officers and clerks of works from one station to another is most prejudicial to the public service; as on their joining a command, and having some six to twelve barracks or other stations to take charge of, a very great amount of local information is essentially necessary to be acquired with regard to these several establishments; and which is very frequently no sooner obtained, than off they are routed to some other point of the compass, there to commence the very same task that has, perhaps, only just been mastered at their former station.

By this migratory system much valuable local knowledge is lost to the public service, and no corresponding beneficial result obtained; but, on the contrary, the clerks of works are almost always impoverished by the great expense incurred in removing their families, for which they have not the least allowance excepting their own personal expense.

It is well known, that if a permanent residence of clerks of works at a station had been allowed in the engineer department, a saving of many thousands of pounds would have resulted to the Government; as at some stations, from peculiarities of climate, &c. most costly failures and reconstructions have taken place, that, with a proper local knowledge, might have been entirely obviated.

But if, as "C. E." suggests, a military architect should be appointed, let him be chosen from amongst the qualified clerks of works. Let his station be permanent: let his salary be a liberal one: let him be only subordinate to the general commanding and the inspector general of fortifications. Let engineer officers return to their own more congenial duties, and in a very short time it will be found that the troops are better housed, and a great deal of money will be saved annually to the public.

Another C. E.

* It is not stated whether the door frame is set back the four inches as required. [It is now.—Ed.]

FIRE-PROOF BUILDINGS.

Shall we ever give up building houses to burn,—brick shells filled with wooden floors, wooden partitions, and wooden stairs, all artistically disposed to connect the whole and prepare for complete destruction in the event of a casual spark? We have often commented on this before now. Under our present system of short leases of another man's ground, improvement in this respect will come very slowly. A writer in *Chambers's Journal*, commenting on the subject, describes a mode of construction much used in Italy. He says:—"It has happened to ourselves to watch the construction of large houses, locally called palaces, in the town of Pisa, for example, in which, we can vouch for it, there was not employed one square foot of timber of any sort from garret to cellar. The only timbers in the house were those of the roofing. Every staircase, partition, ceiling, and floor was made of brick; but brick used in such a way that the arches of the ceilings were scarcely thicker, relatively to their span, than a tolerably thick egg-shell is to its own.

No words can do justice to our surprise when we first realised the fact that arches so constructed will resist any ordinary pressure; and we had to recall to our recollection that no man is strong enough to break in an egg-shell, applying the pressure at the ends. The mere fact of thinness does not necessarily imply weakness, and, indeed, we had ample proof of this in pursuing our observations. The arches of which we now speak are built without centering, the mason striking out his work, to begin with, by horizontal lines along the wall at the required height. If it is intended that the arch should be 'coved up'—that is, sloped from each side to the centre—he draws a line all round the room, and chips away a little groove along this line, to receive the edge of his first row of bricks, or rather tiles, which are secured in place by a little gypsum of a cheap grey sort. After the first row is completed, a second is applied, as before, with a little cement between the edges. The tiles are kept in a bucket of water, out of which they are taken at the moment they are wanted for use. They struck us as being of a superior sort to the common red brick, harder, and more cohesive. These tiles, we also observed, are much of the same shape as if a common brick was split in two longitudinally; their dimensions being about 12 inches long by 1½ inch in thickness. The scaffolding rests on high trestles, and extends over most of the surface of the room; and as the work proceeds, a bit of stick is here and there put on end between it and the advancing arch. When the sides have been thus brought almost to touch each other, the workman cuts away from a tile as much as will just allow it to fill the remaining void with the proper quantity of cement: this put in place, the arch is complete. We have formed one of a party who have walked fearlessly all over such an arch as we have described, a few minutes after its completion. The whole ceiling may, in fact, be considered as one piece; and its convex form not only prevents the tendency to give way from its own gravity, but it will also, like the egg-shell above alluded to, resist an enormous downward pressure besides.

The next process is to fill up the hollow sides of the arch with rubbish, gravel, or whatever is most convenient: with this material, the floor is brought to a level; and then it is carefully trodden down, giving vast solidity to the whole. A coat of mortar is next laid on, and in this are imbedded other tiles, more or less handsome, according to circumstances; or, in many cases, those beautiful compositions are employed in which the taste and skill of the Italians are so conspicuous. Thus the principle of which we speak is applicable, as we can testify from personal observation, to every sort of dwelling, from the cottage to the palace."

Thicker walls are wanted than the Building Act enforces: indeed, the writer goes on to say, "In Italy, houses are 'run up' now anyhow, to last a certain time; 'so that,' as a wag observed, 'they and the building leases may *fall in* together.' We thought the paper-house system was confined to England; but in conversing on our present topic with an intelligent Italian gentleman, he told us that in many places the mode of building with wooden joists and floors was fast superseding that which we had so much admired, and which we have attempted to describe. It is not pretended that it is better or safer, but it is cheaper; and why? Because the bond established between opposite walls, by timber joists and beams, enables the constructor to dispense with the good old quality of strength in these parts of the building—to run up, in short, his walls of mere pasteboard, which would not comport with the outward pressure of the brick arch; while the new plan dispenses with the transport and cost of material and labour on walls of proper thickness, and rubble to fill in the cavities between the sides of the arch and the floors."

NOTES UPON IRON.

The iron trade has not experienced any improvement since our last. In South Staffordshire the aspect of affairs is scarcely so satisfactory as then. Fears of other failures are rife.

A difficulty has been experienced in the past fortnight by a large number of firms in South Staffordshire from the puddlers refusing to work at a reduction of 1*s.* per ton in their wages. After several meetings, at which the attendance became fewer upon every adjournment, the last few "out" determined to accept the masters' terms.

A similar determination was come to by a deputation from Yorkshire, where some puddlers had joined in the South Staffordshire movement.

More iron may, therefore, be expected to be manufactured next than was made last week; for most of the houses whose men have been out, although they have not many orders, yet have a few that should be promptly executed.

ECONOMY AND COMFORT IN WARMING DWELLINGS.

WELCH'S PATENT CALORIFIC REGISTER STOVE.

A stove, whereby more than one room may be warmed by the same fire, has been patented by Mr. Edward Welch, architect, who, it may be remembered, was one of the firm from whose designs the Birmingham Town Hall was erected, his partner in that work being Mr. Hansom. The following description (somewhat condensed) of the stove alluded to was given by Mr. Bainbridge, on Wednesday last, at a meeting of the Association of London Ironmongers, held in John-street, Bedford-row:—The construction of the stove is much the same, in appearance, as that of the best registers, but the radiation of the fire is increased outwards, by larger angles of reflection, whilst the divergence of the heat upwards is checked by a plate on the top of the stove being fixed, air-tight, instead of being loose and open, as in ordinary stoves. On the top of this plate, which occupies the position of the usual register, is fixed a short iron pipe, six or seven inches in diameter, and say from three to four feet long, communicating from the top of the stove to the *brick flue*, and the bottom of which brick flue is made air-tight round the top of the iron pipe. The smoke and spare heat from the top of the fire pass up the pipe into the brick chimney, and, in consequence of its contraction, compared to the ordinary *gathering* in the chimney-breast, obtain a considerable upward force, counteracting all tendency to downward draught, and thereby removing the common nuisance of a smoky chimney. The stove, with the iron pipe on its top, is placed on the hollow chimney-breast, without any brickwork around it. The back, top, and pipe necessarily become heated (but never red hot) by the action of the fire and smoke within them, and the warmth passes through into the chamber in which the stove is placed. A stream of fresh cold air is led to the bottom of this chamber through the hearthstone, and as the air passes over the back and pipe of the stove, it becomes warmed to an agreeable temperature, and is then led through the chimney-breast into the room; and thus a continual stream of fresh pure warm air is supplied to the room, instead of cold draughts from doors or windows; and a constant

self-acting ventilation is thus also effected. By closing the air-valve in the chimney-breast, the flow of warm air into the room can be checked at pleasure, or, by arrangements for the purpose, it can be conveyed into the bedrooms above; thereby enabling one fire to contribute to the comfort of two or three rooms. The principle of this stove has also been applied to a kitchen-range, from which the hall, staircases, and passages of a house may be filled with warm air from the ordinary kitchen-range. Conservatories or greenhouses, and other outbuildings, doubtless, could easily be supplied with warm air in the same way.

SCENERY AND DEVICES AT DRURY-LANE.

IN several respects the pantomime at Drury-lane is a very remarkable production: the allegory on which it is constructed (the conquest of Ignorance by Intelligence), the scenery of Mr. Beverley, and the masks and devices invented by that curious artist (who admits he owes something to the *Builder*) Dykwynkin, are of great excellence. Mr. Beverley, who invented that mixture of mechanism and painting now displayed on these occasions at all our theatres, has never done anything more beautiful than the "Palace of Coral." It is a very charming invention, and is worth a long journey to see it. Of the devices, we would especially point to the incarnations of Arithmetic, Mensuration, and Grammar. These have never been surpassed: the fertility of invention displayed is wonderful, and deserves to be particularized.

Books Received.

Miscellanea Graphica: Representations of Ancient Mediæval, and Renaissance Remains in the possession of Lord Londesborough. Drawn, engraved, and described by F. W. FAIRHOLT, F.S.A. London: Chapman and Hall.

FAVOURED with a large fortune, a liberal spirit, good taste, and a love for the beautiful, Lord Londesborough has gathered together, within a comparatively short space of time, a collection of ancient, mediæval, and *cinque-cento* carvings, jewels, armour, bronzes, implements, decorative drinking-vessels, and ornaments of various sorts, in some respects probably richer than any other in the country. Nor has Lord Londesborough been content merely to purchase: the collection contains numerous specimens of early art, the result of his own intelligent investigations and persevering burrowings. Many will remember with gratification pleasant days on Breach Downs, when, as "Lord Albert," he superintended the diggings, and dispensed unaffected hospitality. In publishing the work before us, now completed, Lord Londesborough has set an example which might be usefully followed by other possessors of art works. Mr. Fairholt, by whom the work has been executed, possesses, as our readers know, not simply power over the pencil, but much knowledge of art and its history, the whole of which he has brought to bear in the execution of his task. The result will be found valuable by many classes.

The twelfth part consists of an historical introduction from the practised pen of Mr. Thomas Wright, M.A. wherein the representations of the specimens forming the collection are made to illustrate an account of general progress. It strikes us that Mr. Wright does not admit sufficiently the influence exercised by the Byzantine artists. The essay, however, is full of knowledge, and is as pleasant to read as it is instructive. Mr. Wright has laboured long in the elucidation of the Mediæval period, and has all its literature at his active fingers' ends.

VARIORUM.

THE cat, the cock, and the butterfly, says an old proverb, do not find the same thing in the same field. While our acute and able contemporary, the *Leader*, remarks that the new number of the *Quarterly* is not so interesting as usual, because of the technical papers contained in it, we are able to say that it is a *particularly* interesting and useful number for that very same reason. Under the head of "Difficulties of Railway Engineering," there is a capital sketch of the achievements of modern English engineering, including a notice of the road over Chat Moss. Then we have a paper on "Wiltshire" (necessarily incomplete), and a long account by an able hand of "Woolwich Arsenal and its Manufacturing Establishments."——In the current number of the *Edinburgh Review* will be found some particulars of the "Hawkers' Literature of France,"—"*Littérature du Colportage*,"—which may serve to awaken attention to the condition of affairs at home,—the literature provided for our own poor. Much has been done within the last ten years to provide cheap good literature: the railway book-stall has worked a surprising revolution, but the movement has yet to go much deeper.——"A descriptive Catalogue of the Rock Specimens in the Museum of Practical Geology," by A. C. Ramsay, F.R.S. local director; H. W. Bristow, F.G.S. geologist; and H. Bauerman, assistant geologist, of the Survey of Great Britain, has been issued from her Majesty's Stationery Office. This is the first of a series illustrative of the several branches of science taught in the Government School of Mines. The present volume constitutes a detailed catalogue explanatory of the only public collection of specimens of the rocks of the British Isles, and must prove of real service, not only to the geological and mining student, for whom it is more especially intended, but also to architects and builders, from the amount of practical information in regard to building stones, slates, limes, &c. scattered throughout its pages.——"The Newspaper Press Directory and Advertiser's Guide," by C. Mitchell, for 1858, revised and considerably improved, has just been published at Mitchell's Advertising Office, in Red Lion-court, Fleet-street. To all advertisers, especially in the country newspapers, this "Guide" is indispensable.

Miscellanea.

INSTITUTION OF CIVIL ENGINEERS. — On January 26, Mr. Joseph Locke, M.P. president, in the chair, the papers read were "On Shearing, Punching, Riveting, and other similar Machinery, employed in the Manufacture of Steam Boilers," and "On the Self-acting Tools employed in the Construction of Steam-engines, &c." by Mr. T. S. Sawyer. A brief description of the machinery for forging rivets, &c. was given, and by one example it was shown that a ton of well-formed rivets, all exactly similar, could be produced in ten hours. The machinery for forging bolts, and other similar articles, was then described, together with the various arrangements of air-hammers suitable for larger work; the principal feature of which consisted in allowing a hammer, or block, to fall by its own gravity against the pressure of air in a cylinder, so as to produce an elastic blow. In the discussion, it was remarked that Mr. Richard Roberts had been one of the earliest introducers of self-acting tools, such as the planing, slotting, and machines for metals. Within the last few years he had also made improvements in punching and riveting machines. His "Jacquard," or multifarious perforating machine, was now employed at the Canada Works, Birkenhead, for punching the boiler-plates to be used in the construction of the Victoria bridge over the river St. Lawrence, Canada. The machine was now punching seventy-two holes in each plate of 10 feet in length, and 3 feet 6 inches in width, and 5-16ths of an inch in thickness. It could punch ninety of these plates per day of ten hours and a half, under the management of one mechanic, three labourers to lift the plates on and off, and one boy to oil the punches. The same sized plate, when punched by hand, would require four men marking with templates, and eight men at the machine itself, and yet it would not do anything like the same quantity of work as the Jacquard machine, especially when a large number of holes had to be made.

GAS.—The gas-works erected at Keynsham have been brought into operation, and the streets and shops illuminated. The whole has been executed by Messrs. T. Atkins and Son, of Chepstow, the company's engineers and contractors, these being the forty-third of similar works put up under their superintendence. The Keynsham works are capable of producing 24,000 cubic feet of gas in twenty-four hours: the gas-holder will deliver 15,000 cubic feet of gas in six hours: the distributing power of the mains is equal to 6,500 cubic feet per hour. The contract, including mains, was taken for 1,475*l*. The ovens are on Clift's patent principle.——At a recent meeting of the Royal Scottish Society of Arts, at Edinburgh, there was read a description of a machine for transporting and laying large gas and water mains, by Mr. William Proctor, engineer of the gas-works at Forfar. A working model was exhibited. The machine is a compound of mechanical appliances so arranged as to raise from the ground and to convey to any place required, also to lower into a trench, gas and water pipes of a large size. After some discussion, in which Mr. Leslie, C.E. and others took part, the paper was referred to a committee.

EAST-INDIAN RAILWAYS: CONSTRUCTION OF BRIDGES AND VIADUCTS.—A test, in reference to the strength of iron railway bridges for Indian railways, took place lately, at the works of Messrs. Westwood Baillie, Campbell, and Co. Isle of Dogs. Colonel Kennedy, the chief engineer of the Bombay and Baroda Railway Company, has in a series of papers pointed out the importance of completing a system under which all the bridges and viaducts should be carried out on a principle which will admit of the adaptation of the portions of any one of these structures to the repair or reformation of any other or all of them. Col. Kennedy's system is that the bridges and spans of all his similar works shall be identical in their parts—a system which, if it had been applied to the construction of such works in his country and to the building of our locomotives, would have effected a saving of some hundreds of thousands per annum in the repairs of our permanent ways and rolling stock. The iron bridge tested is of 60 feet span: the whole weight of it is within 21 tons. The entire load placed upon the bridge was 108½ tons. With 15½ tons upon the centre the deflection was 3-16ths of an inch; with 31 tons, 5-16ths; with 46½ tons, 7-16ths; and with the gross weight mentioned 11½-16ths. The test had reference to the Nerbudda-bridge on the Bombay and Baroda line, and it was one of a series of tests to which the parts of these structures are put as often as any large number of girders are prepared at the establishment. The principle adopted by the Bombay and Baroda Company is to manufacture both the superstructure and the piers of the bridges in the forges of England; and by the adoption of Warren's principles for bridges, and Mitchell's screw piles for piers, the least possible work has to be effected for placing them in their position, and masonry is to the utmost possible extent dispensed with. The line, it is said, will be completed at a cost little over 6,000*l*. per mile, including bridges and viaducts.

HOMES FOR THE WORKING CLASSES AT REDHILL.—The first annual general meeting of the Redhill and Reigate Cottage Improvement Society took place at the Infant School-room, Warwick Town, on Friday week, Mr. G. Lyall, M.P. in the chair. The report of the directors was read and adopted. It states that an eligible site having been obtained, in order to get the most suitable designs for the cottages to be erected, several architects were written to and offered prizes of 30*l*. and 20*l*. for the best two; and Mr. Baxendell's plan having been approved of, he was subsequently appointed architect to the society. The directors decided to build nineteen cottages in 1857-8, of various sizes in nine blocks, which will occupy about one-third of the ground at their disposal. The directors advertised for tenders from builders, and accepted one from Mr. Fisher, who agreed for 2,805*l*. to build and complete the cottages in every respect, including a large tank. This is at the average rate of 147*l*. per cottage. The cottages are now all roofed in, and by the terms of the contract they will be completed at the end of February.

SHUFFLING AS TO CONTRACTORS' "QUANTITIES."—A contractor complains of the conduct of the building committee for the erection of a Methodist Free Church at Wakefield. According to our correspondent, this committee advertised for tenders, stating that quantities would be supplied on application, from which the estimates were to be made out. He accordingly went to Wakefield and applied for the quantities, but they were withheld; and although a member of the committee ascertained specially from the architect that the quantities were to be supplied, our correspondent, on a second visit to Wakefield, was still refused a copy, and had to copy them out for himself. He was not surprised, he adds, after such treatment, to find that not only in every case were Wakefield tradesmen the successful competitors, but that some members of the committee themselves were engaged in the building branches. Our correspondent asks whether advertisers, under such circumstances, are not legally chargeable with the expenses incurred. If committees mean to restrict competitions to town tradesmen, why do they not frankly say so in their advertisements? But even town tradesmen are but too likely to be *done* by such managers.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.—The third *conversazione* meeting of this society for the present session was held on Monday in last week, at the Museum, Taunton. The company numbered between eighty and ninety. Three papers were read; viz. by Mr. Isaac, of Bath, on "Nunney Castle; by the Rev. F. Howse, on "The Habits and Instincts of Bees;" and by the Rev. J. M. Cox, on "The Topography of the Bay of Naples."

PROPOSED ISLINGTON VESTRY-HALL. — The motion carried at a meeting of the vestry, on January 27th, is as follows:—"That it be referred to a committee to prepare new instructions for the guidance of the architect who is to be engaged to erect the Vestry-hall and offices, and submit the same for the approval of the vestry." Who the architect is to be does not appear. A new committee of eleven was elected, viz.—Messrs. Timewell, Savage, E. Shepherd, Reddish, Price, Elt, Starling, Elsom, Witton, Downes, and Parkinson.

THE PROJECTED SUBMARINE TUNNEL ACROSS THE ENGLISH CHANNEL.—Our attention has been called to the circumstance that in 1841 a detailed description of a plan by a Mr. J. S. Morris, for a submarine cast-iron tunnel, was published in the Devonport newspapers, and that this description was briefly recapitulated in the *Builder* a few years since; and that M. Thome de Gamond, who recently projected a tunnel to cross the strait from Dover, is not the originator of such a scheme. We are not aware that M. de Gamond claims to be the first who has ever proposed such a tunnel; but if he does, there cannot be a doubt as to various projectors having at different times, and for many years, brought forward schemes to effect the same object. Whether Mr. Morris himself was the first to propose such a plan we do not know; but it rather appears that his object was to unite a part of Cornwall with a part of Devonshire, across the Hamoaze. One of the first specific projects we recollect of for a tunnel across the Channel was brought forward by a Mr. De la Haye (we think), of Liverpool. We observe from the *Engineer* journal that a Mr. Young, of Glasgow, has brought forward a plan of a cast-iron tunnel for the Channel, which he has described to the Glasgow Philosophical Society.

SOUTH SHIELDS SURVEYORSHIP.—The appointment of borough surveyor of South Shields, in the room of Mr. John Ayris, resigned, took place at the Town-hall, on the 26th ult. The gentlemen selected to go to the poll out of numerous applications were Mr. J. G. Brown, Sunderland; Mr. T. M. Clemence, Bedford; Mr. R. C. Hall, Newcastle; and Mr. J. Wakeford, Brighton. On the votes being taken, Mr. T. M. Clemence was elected unanimously.

THE BRIGHTON SURVEYORSHIP.—At a special meeting of the Brighton town-council, held last week, the town clerk read a report of the General Purposes Committee, as to the vacancy in the office of town surveyor, the concluding portion of which was as follows:—"And your committee further recommend that the salary of the town surveyor shall be 300*l.* per annum; that an assistant surveyor, two clerks, and a messenger be provided (at the expense of the corporation), for the business of the office, at salaries not exceeding those undermentioned, viz.:—

Assistant surveyor	£150 per annum.
Drawing clerk	£1. 10s. per week.
Office clerk	£1. 10s. „
Messenger	15s. „

"That advertisements be forthwith inserted in the local papers, the *Times*, and the *Builder*, for applications for the office of town surveyor. And that the council reserve the power of appointing the assistant surveyor; approving of any appointment of clerks; and of altering or varying the salaries suggested to be paid to all or any of them." The adoption of the report having been moved and seconded, Mr. Alderman Alger moved, "That the report be referred back to the committee," and he did so because he thought the salary too small to command the talent that was required at the hands of the surveyor in a town like Brighton. They would have been wise if they had paid 500*l.* a-year long ago, instead of 250*l.* The duties devolving upon a surveyor were daily increasing, and they must continue to increase. They required a larger amount of experience, and a higher degree of talent than 250*l.* a-year would command. He would have the surveyor appoint his own junior officers. There were a great many works of magnitude now in abeyance, and they would remain so unless they appointed a competent surveyor. Mr. Slight also complained that they had been accustomed to pay too low salaries in Brighton. Referring to the Pavilion property, he said their late surveyor had not courage enough to report the necessity for repairs, which they could all see. It was also necessary for them to think seriously about their drainage,—a subject that would come on this country with such a force that they could not resist it. He did not believe they would find the "native talent" sufficient for it. After some other discussion, the amendment was put and lost, only five votes being given in its favour, and the original motion was then carried.

THE SOCIETY OF ARTS PRIZES AND EXAMINATIONS.—The Council of the Society of Arts have resolved to bring the examinations to the local institutions instead of appointing only a few centres as before; thus throwing open the prize fund to the students of every institution. The fund for 1858 has been opened, and it is anticipated that an increased amount will now be required. The Council have resolved to contribute a certain mileage towards the travelling expenses of those candidates who desire to receive their prizes personally and publicly, and also 5*l.* towards the travelling expenses of each pupil who, obtaining three of the Society's certificates of the first class in the subjects contained in the Oxford programme, is desirous to contend for the degree of associate at the Oxford examinations.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—At the next ordinary meeting, to be held on Monday evening, the 8th inst. a paper "On Natural and Architectural Foliage," by Mr. Jas. K. Colling, will be read.

[ADVERTISEMENT.]

Britannia Life Assurance Office,
London, June 8, 1849.

GENTLEMEN,—I have much pleasure in bearing testimony, after four years' experience, to the efficacy of the Patent Revolving Shutters, erected by you at this Office. They are capable of resisting great pressure, and are superior to anything of the kind I have seen.

I am, Gentlemen,
Your most obedient servant,
PETER MORRISON.

Messrs. CLARK and CO.
15, Gate-street, Lincoln's-inn-fields.

TENDERS.

For new Stabling at Victoria Mews, Notting-hill, for the London General Omnibus Company. Mr. William Scurry, architect. Quantities supplied.

Dethick	£2,893	0	0
Rudkins	2,745	0	0
Todd, jun.	2,693	0	0
Hill	2,592	0	0
Wheeler	2,592	0	0
J. and C. W. Todd	2,466	0	0
Lemon	2,460	0	0
Deards	2,400	0	0
White	2,395	0	0
Raby	2,387	0	0
Richards	2,359	0	0
Palmer	2,319	6	0
Thompson	2,274	0	0
McLennan and Bird	2,260	0	0
Stevens	2,259	0	0
Rowe	2,258	0	0
Pearson	2,250	0	0
Woodruff	2,173	15	4
Purkess	2,159	0	0
Barker	2,152	0	0
Mann	2,134	0	0
Godbolt	2,083	0	0
Chapman and Parsons	1,994	0	0
Greig (accepted)	1,977	0	0

For the enlargement of College House, Highgate. Mr. W. P. Griffith, architect.

Gomme and Boss	£2,380	0	0
G. John Soper	2,369	0	0
J. G. Bishop	2,304	0	0
W. Palmer	2,200	0	0
John Glenn	2,150	0	0
W. H. Rose	2,097	0	0
Bowley, Brothers	2,087	0	0
Lemmant and Bird	2,085	0	0
Evans, Brothers	2,075	0	0
G. Godbolt	2,060	0	0
Robert Mann	1,998	0	0
John Ashton	1,995	0	0
W. Ebbage	1,950	0	0
G. S. S. Williams	1,918	0	0
W. Watson	1,900	0	0
W. Dove	1,857	0	0
D. Fowler	1,847	0	0
James Brake (accepted)	1,699	0	0

For the restoration of All Saints' Church, King's Lynn, Norfolk. Messrs. Medland and Maberly, Gloucester, architects.

Bell and Son, Cambridge	£2,546	0	0
Bambridge, Lynn	2,010	0	0
Rattee, Cambridge	1,970	0	0
Curtess and Balls, Norwich	1,680	0	0
Laird, Lynn	1,600	0	0
Brown, Lynn	1,550	0	0
Bennett, Lynn	1,550	0	0

For eight Cottages, on the Goodhart Estate, Homerton. Mr. H. J. Brown, architect. Quantities supplied.

Wilson	£1,100	0	0
Seagrave and Co.	1,060	0	0
Sutton	1,040	0	0
G. Todd, jun.	1,037	0	0
J. S. Lemon	1,020	0	0
Robinson	1,000	0	0
Raby	998	0	0
Barker	977	0	0
Tully and Sons	970	0	0

For building a pair of Houses at Oakfield-road Downs, near Clapton, for Mr. Shaw. Mr. M. A. Gliddon, architect. Quantities not supplied.

Skinner, Brothers	£990	0	0
Smith	970	0	0
Partridge and Crutch	900	0	0
Raby	877	0	0
Pelham	849	0	0
Case	827	0	0
R. Lawrence	795	0	0
Grey	750	3	0
Walker	650	12	0

For finishing ten Houses in Carleton-street, Kentish-town. Mr. Ledbury, architect.

Hardy and Green	£1,146	0	0
J. Borcham	1,115	0	0
A. Young	1,097	7	6
Herser	1,036	0	0
Willshaw	965	0	0
Timpson	880	0	0
Millage	824	0	0
Smith and Cann	803	2	4
R. Mann	798	0	0
Smee	797	0	0
Pelham	795	0	0
W. Jarvis	784	0	0
Hide	760	0	0
Copp	735	0	0
G. Day	695	0	0
Dunn	680	0	0
Fetham (accepted)	657	15	0

For building a Double Cottage and Offices at Poplar. Mr. Robert Smith, of Dickleburgh, Norfolk, architect.

Lemon	£594	0	0
Pelham	549	0	0
Chapman	499	0	0
Smith	491	0	0
Coomer	490	0	0
Godbolt	480	0	0
Reader and Mitchell	455	0	0
Adams	425	0	0
Watts	418	0	0
Fleming	396	0	0
Tanner (accepted)	390	0	0

TO CORRESPONDENTS.

IN TYPE.—Mr. Rawlinson's paper on "Masonry Construction," read at the Liverpool Architectural Society; "Military Engineering; "Denary v. Decimal;" continuation of "Ancient and Modern Ornament Contrasted," &c. &c.

A. Z. (the clause requires priming and *two* coats).—W. G. (the lofty chimney lately built in the Gray's Inn-road is, we are told, for Messrs. Eley's Patent Cartridge Manufactory. Mr. Angel is the architect; Messrs. Cubitt are the builders. We have no information as to the furnace. The height is called 140 feet).—M. and Co.—Subscriber.—X. Z. (we decline to recommend).—J. G. (the list we gave was verified by the architect).—L. B. (our list was from head quarters).—W. P. G.—T. P.—T. A. (English glass is best).—"Architect's Pupil" (no limitation as to age appears in the law).—One who thinks himself aggrieved (Yes).—J. E.—H. W.—M. S.—J. T. (thanks; next week).—"The Powder, &c."—H. B. K.—E.—A Magistrate.—Smoothing Plane (the rate of wages is not to be easily settled).—A London Incumbent.—Ego.—M. (there is no settled distance at which a wall may be built before a window that has been open "more than twenty years." It must be built so as not to be injurious by deprivation of light or air).—G. P.—J. W. and Co.—R. S.—W. B.—T. M. C.—C. C.—H. P. (in type).—Mr. G.—M. S.—J. T. J. M. and J. N. (copy has not reached us).—J. G.

"BOOKS AND ADDRESSES."—We are forced to decline pointing out books or finding addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the "Editor," and not to the "Publisher."

NOTICE TO SUBSCRIBERS.—A title-page in colours for the last volume may be obtained GRATIS, on personal application at the Office, by those who prefer it to that which accompanied the index in the number for Jan. 9. Covers for the volume may be obtained at the Office, price 2s. 6d. or the Publisher will bind it for 3s. 6d. The complete volume may be obtained, price 21s.

ADVERTISEMENTS.

BOROUGH of BRIGHTON.—The Council of the Borough of Brighton are prepared to receive applications for the Office of TOWN SURVEYOR, now vacant. The gentleman appointed will be required to undertake the direction and management of the surveying and architectural business of the Corporation, and not to be directly or indirectly engaged in any other business; to reside within the borough, and to devote the whole of his time to the service of the Corporation. Salary, 300*l.* per annum, and the services of an assistant and two clerks. Any further necessary information may be obtained on application at my Office.—Sealed applications, with testimonials, stating the age of the applicant, and endorsed, "Application for the Office of Town Surveyor," addressed to the undersigned, must be delivered at the Town-hall, Brighton, on or before MONDAY, the 1st day of MARCH, 1858.

January 29, 1858. C. SHAROOD, Town Clerk.

DRAUGHTSMAN REQUIRED, in a FURNITURE MANUFACTORY at the West-end. Some knowledge of the varieties of style is desired, but readiness in sketching with pencil or pen is indispensable.—Sketches (not large drawings), under cover to H. C. Messrs. Odell and Ives, Princes-street, Cavendish-square, W.

GOOD WRITER and GRAINER WANTED, for the country (about 100 miles from London), who would not object to fill up his time with plain painting.—Apply by letter only, stating wages required, &c. to J. TOLEMAN, 170, Goswell-street, E.C.

WANTED, in a Merchant's Office in the Country, a steady respectable YOUNG MAN, who can make himself conversant with accounts, and write a good hand. One who has had some little experience in an Architect's Office will be preferred.—Apply to Messrs. THOMAS and HAYWARD, Merchants, Wellington, Somerset.

WANTED, TWO respectable LADS, between 14 and 16 years of age, to the STAINED GLASS Business. Good references required.—Apply to REES and CO. 25, Hatton-garden, Holborn.

WANTED, by a Married Man, aged 30, who thoroughly understands bench-work and building in all its branches, an ENGAGEMENT as SHOP or WALKING FOREMAN, or to manage an estate, where trust and confidence are required Satisfactory reference and security given if required.—Address, E. F. at the Office of "The Builder."

TO ARCHITECTS.

WANTED, a SITUATION, as CLERK. The advertiser has been articled to a Fellow of the Institute, and also as a gentleman's apprentice in an engineering firm, where he gained a knowledge of iron construction. Can design and get out working and finished drawings.—Address, J. F. F. 4, Lamb's Conduit-place, Brunswick-square.

AN ASSISTANT, accustomed to prepare designs, finished, working, and detail drawings, perspectives, and superintend works, wishes for a RE-ENGAGEMENT. Has a good practical knowledge of building, is thoroughly conversant with the duties of an architect, and would suit any person requiring a good general assistant.—Address, W. H. 54, Aldersgate-street.